AMERICAN GAS JOURNAL

NOVEMBER 1941

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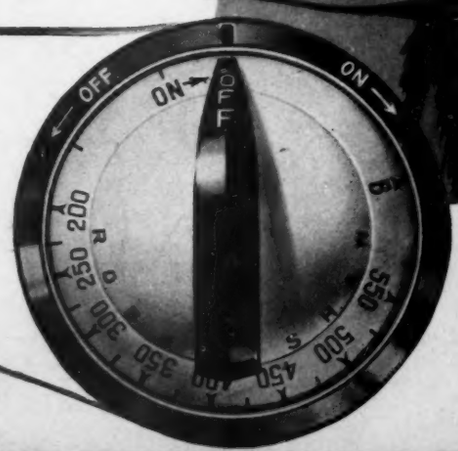

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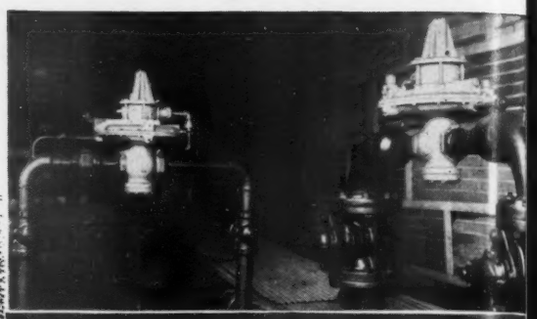

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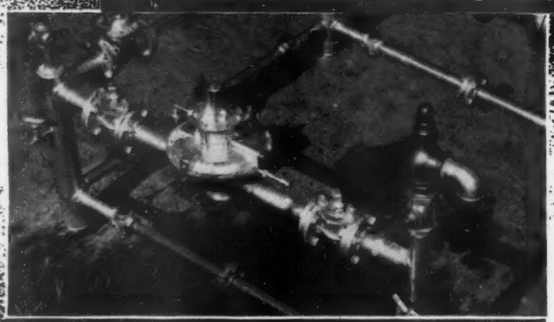

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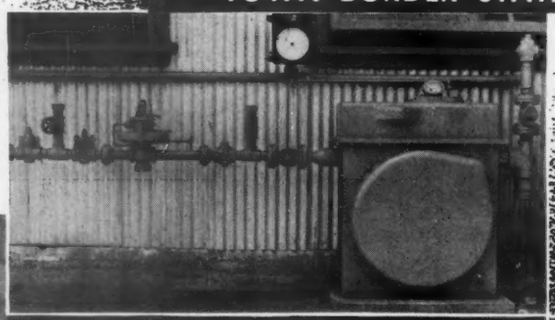

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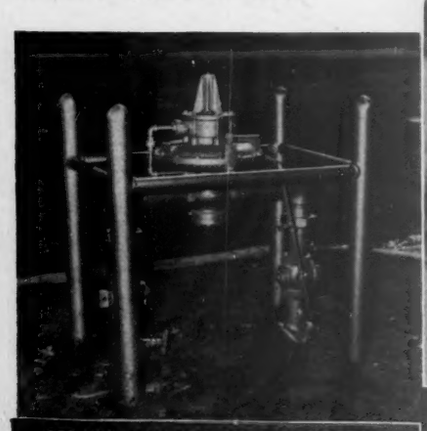

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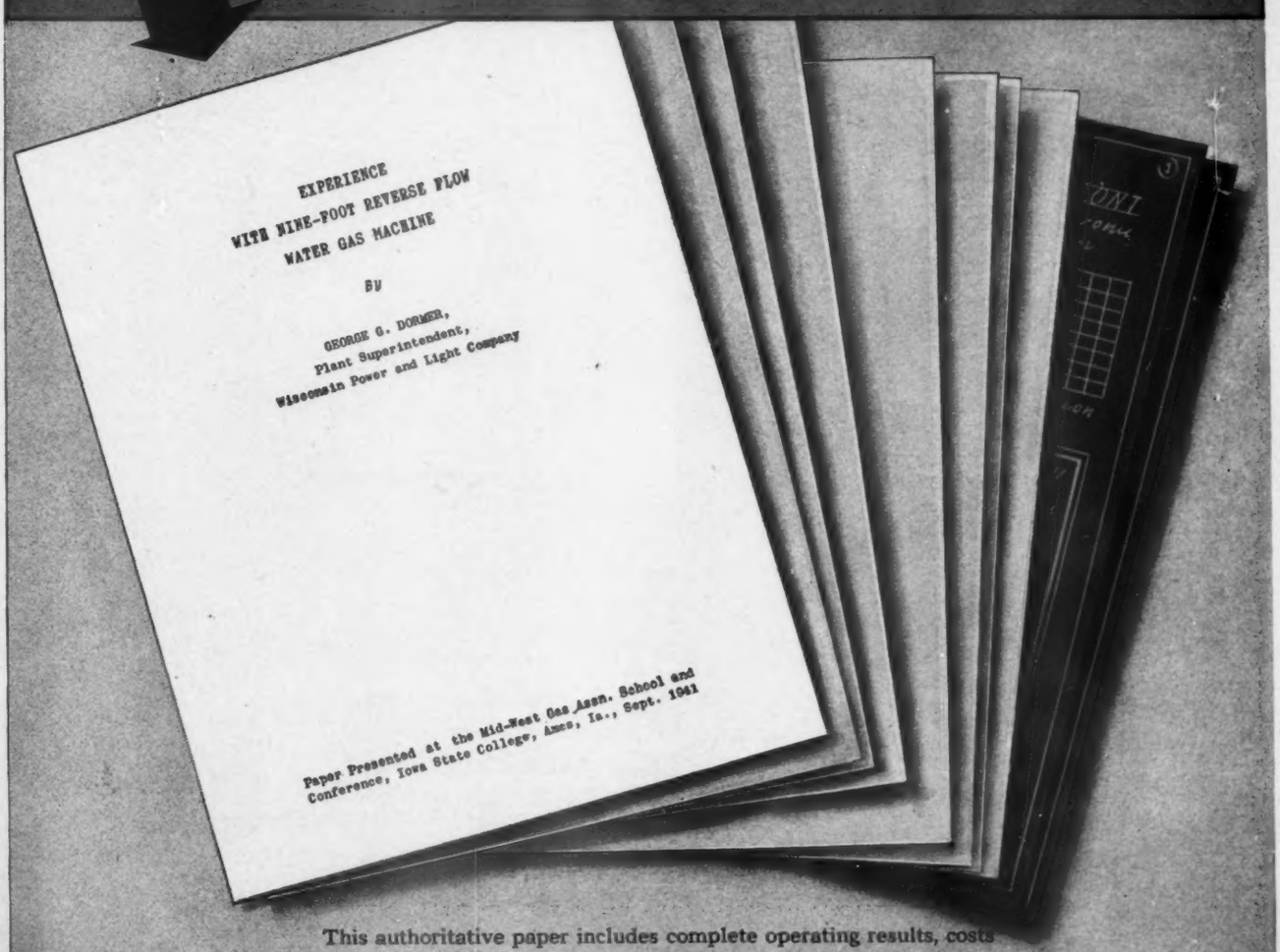
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Plant Superintendent,
Wisconsin Power and Light Company
Paper Presented at the Mid-West Gas Assn. School and Conference, Iowa State College, Ames, Ia., Sept. 1941

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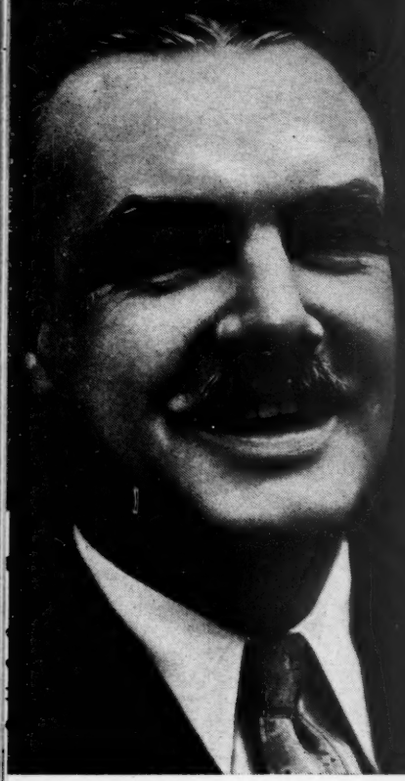

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Chemical Plants	Installed 23	Under Construction 14	Total 37
Total	52	17	69

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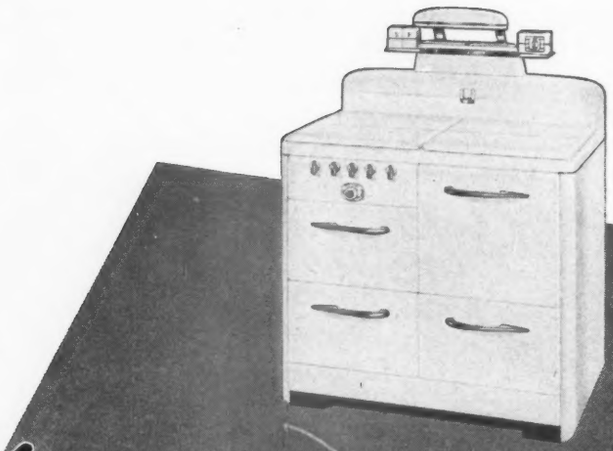

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S. G. KRAKE, *President and Treasurer*

M. E. KELLEHER, *Secretary*

A. I. PHILLIPS, *Editorial Director*

H. T. MATTHEW, *Business Manager*

JAMES C. MUNN, *Midwest Representative*
10515 Wilbur Ave., Cleveland, Ohio
Tel. Garfield 1055

THOMAS MORGAN, *Western Representative*
168 N. Michigan Ave.
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NOVEMBER
1941

AMERICAN GAS JOURNAL

VOLUME 155
No. 5

The 23rd Annual Meeting American Gas Association

DESIGNATED as a "meeting" rather than a "convention," and with a program of vital interest and importance crowded into two and a half days, the annual gathering of the members of the American Gas Association took place at Atlantic City, N. J. on October 20th, 21st and 22nd.

This was a business meeting. Entertainment features had been eliminated. The Accounting Section Luncheon Conferences, the Home Service Breakfast and the General Dinner and Luncheon, while very enjoyable, were devoted to business.

In view of the times and conditions, a registered attendance of 1,804, made up largely of top executives and men and women holding key positions, may be regarded as sufficient evidence of the serious interest in the program.

National defense, the essential part the gas companies are playing in supplying fuel to homes, commercial establishments, cantonments and industries, and the problem of adjusting our operations to fit into a war economy, with all of its restrictions, dislocations and shortages, were the themes that ran through almost every session.

Monday morning and Tuesday afternoon were devoted to meetings of the Industrial & Commercial, Residential and Technical Sections. The Natural Gas Section met on Monday afternoon. The Accounting Section Luncheon Conferences were on Monday, and the Home Service Breakfast on Tuesday. There were General Sessions on Tuesday and Wednesday mornings, a General Dinner Tuesday evening and a General Luncheon Wednesday noon.

The sectional meetings have been covered elsewhere.

First General Session

The first General Session opened Tuesday morning with President T. J. Strickler presiding.

The Treasurer, Mr. Ernest R. Acker, reported that the finances of the Association are in satisfactory condition.

George S. Hawley, President of The Bridgeport Gas Light Company, Bridgeport, Connecticut, was then elected President of the Association for the ensuing year.

The full slate of new officers and directors appears elsewhere in this issue.

The first speaker was Dr. William H. Sebrell, Deputy Assistant Director of the Office of Defense Health and Welfare Services, Washington, D. C., who discussed "Nutrition and National Defense." He stated that diseases and impaired physical condition due to malnutrition are far more prevalent than generally supposed, and that this is true even among the upper classes.Not only health but also morale is very greatly affected by proper diet. Thus, with the possibility of shortages in certain foods definitely before us, the matter of proper nutrition becomes very important.

"The Importance of Balance" was the subject of a talk by F. Alexander Magoun, Professor of Human Relations of the Massachusetts Institute of Technology, Cambridge, Mass.

"Sudden discontinuities like an explosion or an earthquake or a temper tantrum," said he, "never occur except when something is out of balance and always leave damage behind. The secret of all outstandingly successful endeavor is a combination of good balance and good timing. Much has been said about good timing. How about good balance?

"You are not a single unified individual, but a whole combination of people. Only going back to the landing of the Pilgrims, you have had a total of 16,382 ancestors, if there are no duplications among the branches of your family tree. Going back to the time of King Alfred you would have required more ancestors in that single generation alone than the total population of what was then Merry Old England.

"All this is very obvious. What is not so obvious is that you are also a combination of many different and conflicting little people all at work within you at the same time. When you say, 'I want,' what you really mean is, Part of me wants.' It may be the overwhelmingly major part, but still only a part.

"The existence of these hidden and unseen little individuals within us, moulding and guiding our activities, has long been suspected by the poets and philosophers, but only recently proved by the psychologists.

"Thus in managing one's self, as in managing a group of people, one must have good method in dealing with the various groups that make up the parliament of the personality.

"The first group consists of desires. Most of which stem from some instinct with which you were born: physical desires like the need for oxygen, food, liquid, sleep; psychological desires like the need for security, self-expression, recognition. Desires that shout 'I want' or 'I don't want to.' Desires that determine how our energy is expended. Desires that have many subtle, political tricks for getting their own way.

"On the other side of the parliament of the personality is the group which represents the still small voice within and that insists on obedience to what you have been taught is right and wrong. The desires are concerned with what is dynamic in living, the conscience is only restrictive. Desire says 'I want.' Conscience answers, 'Thou shalt not!' Conscience says, 'You must.' Desire answers, 'I don't want to.'

"Now you have a conflict going on within you, half of you set against the other half. Desire wants to act on instinct, conscience insists on following the letter of the law without much regard for its spirit. Both have highly developed skills of justifying their own satisfactions, and each insists that the other has no authority to decide the question. Hence the need for a third disinterested and judicially minded party—your wise judgment.

"One cannot be wise by rules, but only by an interpretation of the actual facts based on sound principles. It is not the task of wisdom to overpower conscience or to compel desire. Rather it is the task of wisdom to listen to both of them and to achieve cooperation between them so that they will try to solve a problem *together* for the good of the *whole personality*. So important a result deserves the most careful attention to the steps by which it is to be achieved."

The last feature on the morning program was the Presidential Address of Major T. J. Strickler, which is printed in full elsewhere in this issue, and is particularly commended to our readers for careful reading.

General Dinner

The first order of business at the General Dinner was the presentation of awards for various outstanding service or to the winners of certain contests. (see page 13)

The speaker of the evening was Dr. Norman V. Peale, Pastor of the Marble Collegiate Church, New York, N. Y. In the course of his inspiring talk he said: "The technique of successful living is based on a formula of three parts. The American of 1941 and of the future will not enjoy prosperity or happiness apart from these factors.

1. The preservation of freedom and liberty.
2. The conquest of fear and tension within himself.
3. The satisfaction of personally doing something about the fix we're in.

"We make the mistake of taking freedom for granted. We've always had it. so why not always? But the fact is that we have only enjoyed freedom for a century and a half, which is a short time compared to main history. About forty billion people have lived in the period of recorded history. Of these, only three billion, or three per cent, have enjoyed the blessing of any kind of freedom; for a short time in the days of the Roman Republic, in Greece, the Scandinavian countries, the Low Countries, in France, Switzerland, England and America. The rest for the most part is darkness. Thirty-seven billion people have lived under a rule where they could not call their souls their own. And like candles under a giant snuffer, the flame of liberty has gone out in country after country, until only a few remain. Even there the gusts of strong winds from totalitarian lands cause the flame to flicker. Liberty is fragile and insecure.

"Liberty in America will not be lost by a conqueror from without, but by indifference from within. The Great Wall of China was never breached, but conquering hordes poured through gates the individual keepers of which had been weakened.

"Sometimes nations go down through an inner deterioration. Gibbon, in his 'Decline and Fall of the Roman Empire,' says that the five causes for the fall of the greatest empire in history were (1) Higher and higher taxes to support a top-heavy government, that is, too much government; (2) the piling of armament upon armament, when the real enemy was within; (3) the mad lust for pleasure, which became ever more sensual; (4) the rapid increase in divorce, undermining the dignity and sanctity of the home; (5) the decay of religion into empty forms.

"It is a sinister fact that every one of these causes of Rome's decline prominently exists in contemporary society."

Second General Session

The first paper by H. Carl Wolf, President of Atlanta Gas Light Company, Atlanta, Ga., on "Promotional Policies in the National Emergency" is printed in full elsewhere in this issue.

F. Marion Banks, Vice-President of Southern California Gas Company, in a paper entitled "Research During and After the Emergency," discussed this subject with particular reference to the new Institute of Gas Technology.

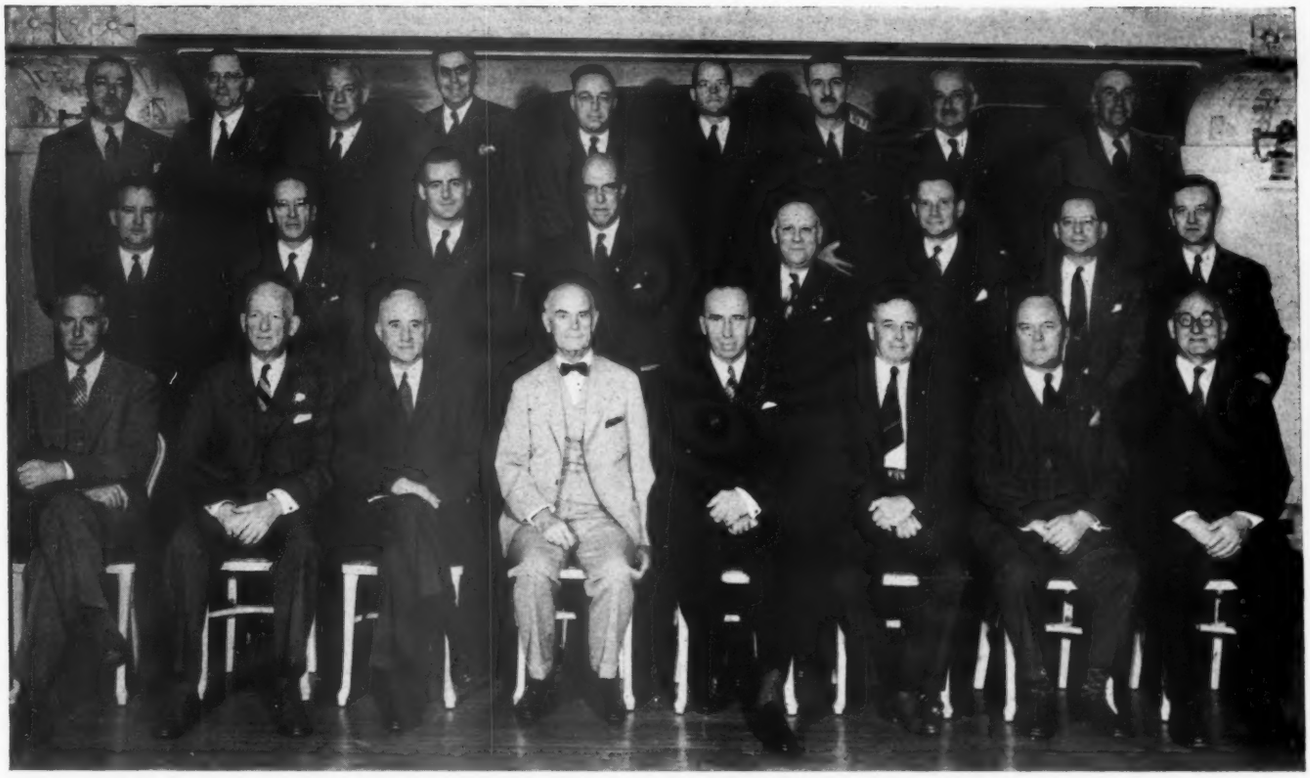
"Research which is to give us long term results after the present emergency," he said, "must be started now, for research is not the sort of thing you can buy a pint or a quart of any time you feel you have the spare funds. It takes planning, organization, training and long continued application to get results. Hence it is fitting that the gas industry has recently organized the Institute of Gas Technology which is now functioning in collaboration with Illinois Institute of Technology, formerly Armour. The objectives of the Institute are:

1. Training of men for the industry.
2. Conducting fundamental and applied research.
3. Collecting and disseminating scientific information.
4. Encouraging further research by others.

"The program is based on the premises that:

1. An urgent need for research exists.
2. Coordination of existing research is important.
3. An independent research organization, such as this, can best develop results of value to the industry.
4. Results of research must be correlated.
5. Men trained in gas research can best translate research results into functions of our business.

"This Institute is going to hand pick graduate students from various scientific schools. They will be set to work, a very few a year—to earn masters or doctors degrees in the special field of gas research. The course of study, requiring college graduation for admission, will include three years of academic training based upon the fundamental sciences and fundamental research. The fundamental sci-



EXECUTIVE COMMITTEE, AMERICAN GAS ASSOCIATION, 1941-42

Left to right—FRONT ROW: E. R. Acker, Poughkeepsie, N. Y.: C. M. Cohn, Baltimore, Md.; Alexander Forward, New York, N. Y.; George S. Hawley, Bridgeport, Conn.; T. J. Strickler, Kansas City, Mo.; A. F. Bridge, Los Angeles, Calif.; Walter C. Beckjord, New York, N. Y.; P. S. Young, Newark, N. J.

SECOND ROW: Kurwin R. Boyes, New York, N. Y.; D. W. Harris, Shreveport, La.; F. T. Carmody, New York, N. Y.; Marcy L. Sperry, Washington, D. C.; Watson E. Derwent, Rockford, Ill., Charles A. Tattersall, New York, N. Y.; N. Henry Gellert, Philadelphia, Pa.; D. P. Hartson, Pittsburgh, Pa.

BACK ROW: H. Carl Wolf, Atlanta, Ga.; H. D. Hancock, New York, N. Y.; C. E. Bennett, Pittsburgh, Pa.: James A. Brown, New York, N. Y.; E. N. Keller, Philadelphia, Pa., Henry N. Mallon, Bradford, Pa.; R. J. Rutherford, Worcester, Mass.; Herman Russell, Rochester, N. Y.; C. E. Gallagher, Cleveland, Ohio.

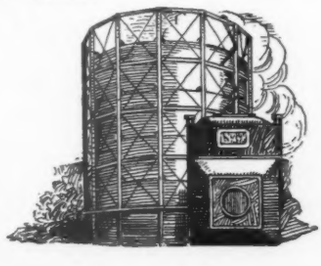
ence studies include organic chemistry; engineering mathematics; physics; fluid flow and heat transfer; physical chemistry; gas technology; chemistry of polymerization and depolymerization; and catalysis and surface chemistry. With a high ratio of faculty to students, these men will receive supervised training in some research and that, together with required summer work in the gas industry, is expected to produce men prepared to enter our industry in greater degree than has been possible heretofore."

"The Institute of Gas Technology" was discussed in more detail by Dr. H. T. Heald, its President.

Hugh H. Clegg, Assistant Director of the Federal Bureau of Investigation told something of the counter espionage work of the Bureau and urged the full cooperation of all in the important work it is doing.

Finally, the Time and Place Committee, under the Chairmanship of A. W. Ambrose recommended "that the 24th Annual Meeting be held in San Francisco, Calif, during the week of October 5, 1942.

"The Committee started out in agreement that it was advisable to meet in 1942 at a point distant from the Eastern Seaboard, since the Annual Meetings of 1938, '40 and '41 were held in Atlantic City, and that of 1939 in New York City. If a meeting point away from the Atlantic Coast is advisable, then 1942 seemed an appropriate year because it does not appear at this time as though there will be an exhibition of appliances and equipment under conditions now prevailing and that may be expected to prevail during the near future.



"There were a variety of factors for your Committee to consider. A real effort was made to weigh the interests of its members in all sections of the country and in this connection, it should be borne in mind that the American Gas Association has never held its Annual Meeting on the Pacific Coast. Then, there are uncertainties of the national and international situation that lie ahead. Under the by-laws of the Association, the Executive Board may change the meeting place recommended by your Committee if for some reason it is deemed advisable during the coming year."

General Luncheon

An informal award, not mentioned on the program, was made by President Strickler to the Lone Star Gas Company for its outstanding record in winning awards.

The final event was a fine inspirational and patriotic address by Dr. Allen A. Stockdale.

New A. G. A. Officers For 1941-1942

President: George S. Hawley, president, The Bridgeport Gas Light Company, Bridgeport, Conn.

Vice-President: A. F. Bridge, vice-president and general manager, Southern Counties Gas Company, Los Angeles, Calif.

Treasurer: Ernest R. Acker, president, Central Hudson Gas & Electric Corporation, Poughkeepsie, New York.

Directors—Two Year Terms

Walter C. Beckjord, vice-president & general manager, Columbia Gas & Electric Corporation, New York, N. Y.

C. M. Cohn, executive vice-president, Consolidated Gas Electric Light & Power Company, Baltimore, Maryland.

Watson E. Derwent, vice-president, George D. Roper Corporation, Rockford, Ill.

Ralph L. Fletcher, vice-president, Providence Gas Company, Providence, R. I.

R. H. Hargrove, vice-president and general manager, United Gas Pipe Line Company, Shreveport, La.

D. A. Hulcy, president, Lone Star Gas Corporation, Dallas, Texas.

Bruno Rahn, president, Milwaukee Gas Light Company, Milwaukee, Wisconsin.

Louis Ruthenburg, president, Servel, Inc., Evansville, Ind.

E. J. Tucker, general manager and secretary, Consumers Gas Company of Toronto, Toronto, Ontario.

H. Carl Wolf, president, Atlanta Gas Light Company, Atlanta, Georgia.

George S. Hawley

Arthur F. Bridge

E. R. Acker

George S. Hawley

George S. Hawley is president of The Bridgeport Gas Light Company, Bridgeport, Connecticut.

Mr. Hawley was born and raised in Connecticut. In his early business life he was the official court stenographer of the Superior Courts for Fairfield County. He studied law and was admitted to the Bar in 1915, after which he practiced law for a short time. Later he was elected vice-president and general counsel of The Bridgeport Gas Light Company, and has been its president since 1928. He has been identified with many civic and philanthropic projects of Bridgeport and the State.

He is president of the Connecticut Gas Association and the Bridgeport Manufacturers Association. He is president of the Society of Gas Lighting and was recently president of the New England Gas Association and the Guild of Gas Managers of New England.

Mr. Hawley is a vice-president of the United States Chamber of Commerce and a director of the following organizations: Connecticut and Bridgeport Chambers of Commerce, American Gas Association, Bridgeport Hydraulic Co., Black Rock Bank & Trust Co., Bridgeport People's Savings Bank, and Bridgeport-City Trust Company. He is a member of the American, Connecticut and Bridgeport Bar Associations and the Connecticut Manufacturers Association, and of various clubs and engineering associations.

Arthur F. Bridge

Arthur F. Bridge is vice-president and general manager of the Southern Counties Gas Company of California, with headquarters in Los Angeles, California.

Born on April 2, 1891, in San Francisco, Mr. Bridge was graduated from the University of California at Berkeley with a B.S. in Electrical Engineering in 1912, and received his M.S. in 1913. He became associated with the California Railroad Commission in 1913 as assistant engineer, and remained in that post until 1917, when he joined the United States Army as a first lieutenant in the engineer corps.

His record during the World War includes service overseas from July, 1918, through March, 1919. He became a captain in the engineer corps in September, 1918, and was named assistant chief engineer of the Belgian Mission of the American Commission to negotiate Peace and War Damages in Allied Countries in January, 1919.

He became associated with the Southern Counties Gas Company in 1919 as rate engineer, became executive engineer in 1926, and vice-president and director in 1928. He was elected to his present position as vice-president and general manager in 1939.

He has been a director of the American Gas Association for several years, and a member of the Laboratories Managing Committee since 1931. He also has been a member of the Managing Committee of the Natural Gas Section for several years.

Ernest Reynolds Acker

Mr. Acker is president and general manager of the Central Hudson Gas and Electric Corp., Poughkeepsie, N. Y.

He was graduated from Cornell University, class of 1917, and attended Harvard University, Graduate School of Business Administration, in 1927.

He served overseas as First Lieutenant, United States Chemical Warfare Service, during the World War.

After a short period of time with the Yonkers Electric Light & Power Co., Yonkers, N. Y., and the Bethlehem Steel Co., Bethlehem, Pa., Mr. Acker became identified with the Central Hudson Gas & Electric Corporation in 1919 as assistant engineer in the general operating department. He was made general superintendent of the Kingston Gas & Electric Company—at that time a unit of the Central Hudson System—in 1921 and held that position until he was appointed general commercial manager of the Central Hudson Gas & Electric Corporation in 1925. In 1932 Mr. Acker became president and general manager of the Company, succeeding the late Thaddeus R. Beal.

Mr. Acker has served as vice-chairman of the Commercial Section of the American Gas Association in 1929, chairman of the section in 1930 and member of the advisory council, 1931. In 1936 he was president of

the Empire State Gas & Electric Association. He is a member of the Operating Committee of the Edison Electric Institute.

Section Chairmen and Vice-Chairmen

Accounting Section: Chairman—Lyman L. Dyer, Lone Star Gas Company, Dallas, Texas; Vice-Chairman—L. A. Mayo, Connecticut Light & Power Company, Hartford, Conn.

Residential Section: Chairman—E. J. Boyer, Minneapolis Gas Light Company, Minneapolis, Minn.; Vice-Chairman—B. A. Seiple, Jersey Central Power & Light Company, Asbury Park, N. J.

Industrial & Commercial Gas Section: Chairman—George F. B. Owens, The Brooklyn Union Gas Company, Brooklyn, N. Y.; Vice-Chairman—B. H. Gardner, Columbia Engineering Corporation, Columbus, Ohio.

Manufacturers Section: Chairman—John A. Robertshaw, Robertshaw Thermostat Company, Youngwood, Pa.

Natural Gas Section: Chairman—J. French Robinson, The East Ohio Gas Company, Cleveland, Ohio; Vice-Chairman—B. R. Bay, Northern Natural Gas Company, Omaha, Nebraska.

Technical Section: Chairman—Harold L. Gaidry, New Orleans Public Service Inc., New Orleans, La.; Vice-Chairman — John H. Wolfe, Consolidated Gas Electric Light & Power Co. of Baltimore.

L. L. Dyer

E. J. Boyer

G. F. B. Owens

John A. Robertshaw

J. French Robinson

Harold L. Gaidry

AWARDS

Charles A. Munroe Award

Highest honor within the gift of the American Gas Association was conferred on Thomas R. Weymouth who retired on April 1 as vice-president of the Columbia Gas & Electric Corporation, New York, after a distinguished career in the natural gas industry. Mr. Weymouth received the Charles A. Munroe Award for having made the most outstanding recent contribution toward the advancement of the gas industry.

Consisting of a substantial financial acknowledgment and engrossed certificate, the award was made to Mr. Weymouth for his leadership of organized research activities and for his individual accomplishments of a fundamental and permanent nature.

Thomas R. Weymouth

Among the many achievements over a period of years which led to the selection of Mr. Weymouth for this high honor are the following:

He experimented extensively in the operation of gas compressors and engines and developed formulas for computing the actual gas delivery capacity and power requirements of compressors. He invented a special type of gas cooler for increased efficiency and collection of condensates.

Mr. Weymouth collaborated in the first practical determination of the deviation of natural gas from Boyle's Law and conducted independent research on this subject, developing an approximate simplified method of securing the result. He also developed new instruments for determining the specific gravity of natural gas and collaborated with the National Bureau of Standards in a study of the efficiency and accuracy of the devices then available.

He conducted independent research on the extraction of gasoline from natural gas and collaborated in the development of the charcoal process. He collaborated in the development of the Oliphant Pitot Tube and developed the so-called Weymouth Formula for the flow of gas in pipe lines.

Mr. Weymouth invented one type of orifice meter and established the coefficients which formed the basis of measurement by the Foxboro meter for gas and other fluids until the revision made by the Gas Measurement Committee of the American Gas Association in 1935. He was chairman of the latter committee from its origin to date. Mr. Wey-

mouth also has done research work on the underground storage of natural gas; in fact worked on some of the earliest experiments.

Born on March 16, 1876, at Lock Haven, Pa., Mr. Weymouth was graduated from Massachusetts Institute of Technology in 1897. His interest in the natural gas industry began in 1903 when he became assistant engineer for the National Transit Company, Oil City, Pa. His duties involved engineering work with various gas companies and in 1911 he joined the United Natural Gas Co., Oil City, as assistant engineer, was soon made chief engineer and later was also chief engineer for the Pennsylvania Gas Company, Warren, Pa.

In 1923 he became president of the Iroquois Gas Corp., the Iroquois Building Corp. and the Snyder Natural Gas Co., Buffalo, N. Y. Five years later, in 1928, Mr. Weymouth went to Tulsa, Okla., as president of the Oklahoma Natural Gas Corp. and the American Natural Gas Co. where he remained until 1930 when he joined the Columbia Gas & Electric Corp. as vice-president in charge of operations.

Mr. Weymouth was a member of the Natural Gas Association of America since 1911, and, since its merger, has been a member of the American Gas Association, serving as chairman of the Natural Gas Section in 1938-1939. As a member of the Main Technical and Research Committee and chairman of the gas measurement group, he has provided invaluable leadership in the Association's research program.

In 1920, Mr. Weymouth was consulting engineer for the Public Utilities Commission of Alberta, Canada, in one of its cases and was a member of the arbitration commission for the adjustment of the rates of the Canadian Western Natural Gas Light, Heat & Power Company.

The Charles A. Munroe Award Committee consisted of C. L. Campbell, Chairman, F. H. Lerch, Jr., and D. A. Hulcy.

Awards for Outstanding Accomplishments in Safety

Representatives of 11 units of gas companies throughout the country received Merit Awards from the American Gas Association for achievements in accumulating one million or more man-hours without a disabling injury accident. The awards, which were recommended by the Accident Prevention Committee and approved by the Executive Board, were presented by President T. J. Strickler at the General Dinner in the Hotel Traymore.

The following companies received this outstanding recognition for their safe operation records:

The Northwestern Ohio Natural Gas Company, Toledo Division, Columbus, Ohio, worked 2,678,375 man-hours with an average of 370 employees from July 15, 1937 to January 1, 1941 without a disabling injury accident. C. I. Weaver, president, received the certificate on behalf of the company.

The Ohio Fuel Gas Company, Distribution Department, District No. 5, Mansfield, Ohio, worked 1,528,289 man-hours with 170 employees from June 8, 1936 to January 1, 1941, without a disabling injury accident. C. I. Weaver, president, received the certificate on behalf of the company.

The East Ohio Gas Company, Safety District No. 8, Youngstown, Warren & Niles Divisions, Cleveland, Ohio, worked 1,403,089 man-hours with 170 employees from February 23, 1937 to June 30, 1941, without a disabling injury accident. J. French Robinson, president, received the certificate on behalf of the company.

The United Gas Pipe Line Company and Union Producing Company, Monroe District, Shreveport, La., worked 1,306,095 man-hours with 300 employees from August 26, 1938 to June 25, 1941, without a disabling injury accident. N. C. McGowen, president, received the certificate on behalf of the company.

The Equitable Gas Company, Meter Shop Division, Pittsburgh, Pa. worked 1,253,245 man-hours with 40 employees from March 19, 1926 to May 31, 1941, without a disabling injury accident. Frank Schauer, vice-president, received the certificate on behalf of the company.

The Lone Star Gas Company, Petrolia Compressor Station, Dallas, Texas, worked 1,181,038 man-hours with 50 employees from January 23, 1931, to June 1, 1941, without a disabling injury accident. D. A. Hulcy, president, received the certificate on behalf of the company.

The Consolidated Gas Electric Light & Power Company of Baltimore, Entire Gas Division, Baltimore, Md., worked 1,155,808 man-hours with 1901 employees from February 17, 1941, to June 3, 1941, without a disabling injury accident. J. H. Wolfe, Gen. Supt. of Gas Oper. received the certificate on behalf of the company.

The Gulf States Utilities Company, Baton Rouge, La., worked 1,131,104 man-hours with 120 employees from November 6, 1936 to June 15, 1941, without a disabling injury accident. N. C. Leonard, vice president, received the certificate on behalf of the company.

The Ohio Fuel Gas Company, Southern Compressor Division, Columbus, Ohio, worked 1,076,451 man-hours with 60 employees from July 23, 1934, to January 1, 1941, without a disabling injury accident. C. I. Weaver, president, received the certificate on behalf of the company.

The Brooklyn Union Gas Company, Greenpoint Works, Brooklyn, N. Y., worked 1,050,045 man-hours with 504 employees from March 5, 1940 to April 8, 1941 without a disabling injury accident. Clifford E. Paige, president, received the certificate on behalf of the company.

The Ohio Fuel Gas Company, District of Fremont, Ohio, worked 1,022,271 man-hours with 80 employees from May 25, 1935 to June 30, 1941, without a disabling injury accident. C. I. Weaver, president received the certificate on behalf of the company.

Awards Made to Home Service Directors

Three directors of home service departments of gas utility companies were honored when they received the first annual McCall's Magazine Awards for making the most outstanding contribution to the advancement of better living in the home through the promotion of domestic gas appliances and equipment.

First prize of $100.00 and an engraved plaque went to Albertine Berry, home service director, Lone Star Gas Company, Dallas, Texas. Second prize of $50.00 and a framed illuminated parchment was awarded to Mildred R. Clark, home service supervisor, Oklahoma Natural Gas Company, Tulsa, Okla., and third prize of $25.00 and a framed illuminated parchment was won by Florence Matheny, home service director of the Southern Counties Gas Company at Monrovia, California.

The contest was open to all home service departments in this country and Canada. Contestants were required to submit papers of 2000 words or less covering the work of their home service departments, divided as follows: aim of department, training of personnel, community activities, increase in scope of activities, and accomplishment of aim.

The Jury of Awards consisted of F. M. Rosenkrans, new business manager, The Gas Service Co., Kansas City, Mo., chairman; W. E. Bolte, new business manager, The Brooklyn Union Gas Co., Brooklyn, N. Y.; B. T. Franck, vice-president,

Milwaukee Gas Light Co., Milwaukee, Wisc.; J. C. Sackman, general sales manager, Northern Indiana Public Service Co., Hammond, Ind.; and R. E. Williams, new business manager, Binghamton Gas Works, Binghamton, N. Y.

A. G. A. Prize Paper Contest Winners

Robert H. Lewis, field representative in the promotional department of the Washington Gas Light Company, Washington, D. C., was awarded first prize of $150.00 in the prize paper contest conducted by the Committee on Personnel Practices of the American Gas Association on the subject "How I would Increase the Public Acceptance of Gas as the Ideal Domestic Fuel." Second prize of $75.00 was won by Theodore B. J. Merkt, manager of the Flatbush Branch of The Brooklyn Union Gas Company, Brooklyn, N. Y. Charles W. Kimball of the Hartford Gas Company, Hartford, Conn., received honorable mention.

Presentation of the awards was made by George S. Hawley, president of The Bridgeport Gas Light Company, Bridgeport, Conn.

When the contest closed on May 1, 1941, entries of 550 gas company employees had been received. They came from all parts of the country and were written by all kinds of employees. In addition to the national prizes, many companies offered prizes for the best papers submitted by their own employees.

In commenting on the contest Mr. Hawley said: "The papers as a whole were of exceptionally high calibre and evidenced a thorough knowledge of the gas industry and its problems. A series of papers based on the contents of the essays submitted in this contest would be informative to everybody and I believe of real constructive value to the industry."

Mr. Hawley and retiring Association President T. J. Strickler, acted as judges in the contest.

7 CP Range Salesmen Win Atlantic City Trips

Top-ranking CP gas range salesmen in the seven divisions of the United States were awarded free all-expense trips to the Annual Meeting of the Association in the national Certified Performance gas range sales campaign conducted by the 1941 CP Ranger Club of the American Gas Association in cooperation with the Association of Gas Appliance and Equipment Manufacturers.

Climaxing a series of luncheon and dinner events at Atlantic City during which they were feted, the salesmen were presented to the Residential Section at a special ceremony Tuesday afternoon in the Hotel Traymore. George W. Scofield, chairman of the Domestic Range Committee, and new business manager of the Republic Light Heat and Power Co., Buffalo, N. Y., made the presentation, described their sales accomplishments and presented attractive Ranger Club awards.

Those whose sales ability won this national recognition are:

Division 1—William M. Ellis, Southern California Gas Co., Glendale, California

Division 2—William J. Collins, Iroquois Gas Corp., Buffalo, New York

Division 3—Richard C. Borne, Minneapolis Gas Light Company, Minneapolis, Minn.

Division 4—Miss Eleanore Kraus, Gary Heat, Light & Water Co., Gary, Indiana

Division 5—W. F. Rountree, Mobile Gas Service Corp., Mobile, Alabama

Division 6—Guy G. Fowle, The Gas Service Company, Pittsburg, Kansas

Division 7—B. M. Smilie, Alabama, Gas Company, Anniston, Alabama

Messrs. Collins and Fowle were repeat winners in their divisions, having won similar awards in the 1940 campaign.

Acceptance Address of Incoming President—George S. Hawley

I am not unmindful of the high honor which you have given me, nor am I deceived as to the great responsibilities which go with it, but we, the officers and the staff, know that with you, the members of this great association, standing with us, we can carry on successfully the work of our century-old yet ever new and progressive gas industry; perhaps not so successful in the monetary sense, but highly successful in performing our full duty and pleasure in crushing out of existence that ugliest of ugly things, Hitlerism.

Uppermost in our minds is the tremendous defense program in all its ramifications, and to this we pledge our constant and unswerving attention; nothing must interfere with it, to the end that "freedom shall not perish from the earth."

For a long time I was deeply concerned over the outcome of the terrible Titanic struggle which scourges the world, so much depends upon certain factors; but I have not now the slightest doubt, notwithstanding the gloom and terror all around us. My belief is profound in the ultimate destruction of the world's worst enemy of civilization. But my faith is not so strong in America being able after "the tumult and the shouting dies", to keep intact the economic fabric which has held the people of the United States together in the enjoyment of what we have called the American way of life.

The assumption of state, business and individual rights and powers by the Federal Government in the national emergency, the creation and maintenance of many administrative and operating boards to regulate and control industry, business, and agriculture, the building of great fighting machines in the army, the navy, and in the air—all these things and others of great importance have already markedly changed our mode of life; and no matter how sincerely official Washington may endeavor to return America to Americans in the essentials of democracy, it will be wellnigh impossible to accomplishment unless the great majority of the thinking people do their best, unselfishly and courageously, to adapt themselves personally and businesswise to the readjustment period, which will come after hostilities cease, and when from afar Peace shall beckon us to a fuller and holier life. If we succeed, as I pray we may, we shall once more be a happy nation and we shall also be the great uplifting force of the world.

Through it all, you and I and all true men and women of the country must maintain our faith, difficult though it may be, in the homely fundamentals which have made us great. We must possess and practice them, and also maintain intelligent self-interest, tolerance and dogged insistence upon what is right in government as well as business; and while we do not ask for a complete return to ante bellum times, we do ask that there shall be such balance between powers and obligations, responsibilities and opportunities, that the sovereign people shall in truth be sovereign; for only thus can the glory of the highest civilization be exemplified in our own blessed America.

The American Gas Association Is on the Job

By
Major T. J. Strickler
Vice-President and General Manager
Kansas City Gas Company,
Kansas City, Mo.

PRESIDENT
AMERICAN GAS ASSOCIATION

Sudvarg Studio

T. J. Strickler

AGAIN it is our good fortune to foregather as friends and co-workers in the gas utility industry. We are the second oldest public utility enterprise in the United States. Present in this audience are workers in all branches and departments of the industry. Numbered among us are veterans whose entire gainful lives have been devoted to the gas business. Here, too, are those of the younger generation who constitute the reserves who will take over the key positions in the future. Should we desire to see in one place and on one occasion a typical national cross-section of the personnel of the gas industry—a composite of the human element which makes the gas business tick—we would find it here.

Because of national developments, I shall depart from the usual procedure in a presidential address and not attempt to give you a technical summation of the many activities of the Association. A detailed description of these you will find in the committee reports and records of the Association. Instead, I shall discuss in as brief a manner as possible those activities which indicate specifically that this Association is on the job in the present emergency.

Some time ago, in Washington, I heard a man say (and I am in complete agreement with him) that this country has a job to do and that the sooner the job is completed, the better it will be for this country. The activities of this Association are an important part in the proper handling of that job, and I feel I can say to you that we have been on the job.

Although the gas industry is highly integrated, it is nevertheless a complex undertaking with some characteristics peculiarly its own. It cannot be advantageously considered as a whole without recognizing that it is a production business, a manufacturing business, a transportation business, a distribution business, a collection business, a mercantile business, a development business, and, finally, a business regulated in the public interest.

Other lines of enterprise may embrace some or most of these elements, but I doubt if any industry outside of our own includes all of them, and I have not overlooked the electric and water utilities which offer the closest comparisons. Each of these elements of our business has its special problems and superimposed on them are other problems affecting the industry as a whole. It is our task to solve them all in the light of what is good for the entire industry.

Through the instrumentality of a national trade organization, the American Gas Association, we are able to stage a meeting such as this, the 23rd of its kind. At the Gas Congress held at the Louisiana Purchase Exposition at St. Louis thirty-seven years ago, my late chief, Henry L. Doherty, speaking on the topic, "The Ideal Gas Association," said "Under proper conditions there should be one, and only one, gas association of national character."

It was not until fourteen years later that he saw his hopes become a reality. He helped organize the American Gas Association, he served faithfully for years as a member of its Executive Board and in other capacities. Until life itself was denied him, he continued to be interested in following Association affairs. The American Gas Association never had a more loyal supporter.

I mention this because we are so prone to overlook the importance of the human element in Association work. I suspect this is because we are joined together for the common advancement of all, the interests of the industry transcending those of the individual to such an extent that personalities are submerged far more than is the case in one's own company.

Looking at the A.G.A. objectively we say it is a mutual, nonprofit, voluntary membership organization, truly representative of the gas industry and thus qualified to function as the industry's official spokesman. We realize that problems affecting our industry require cooperative effort on a national scale for their successful solution. Thus, we think of the American Gas Association as a convenient means for making possible an interchange of opinion through centralized organization, group judgment, concerted action and strong leadership.

So much for a cold, matter-of-fact conception which arbitrarily ignores the altruistic side of human nature and fails to take cognizance of the all important public service aspects of our business. True, the American Gas Association is all the things I have just mentioned, and of necessity must be if it is to serve the gas industry effectively, but I also visualize it from another angle.

To me, it is an organization designed to get the gas men together in one family for the general betterment of the industry in all of its various operations. Thus united, we have the personnel and the machinery to accomplish that one objective toward which all effort of a constructive and enduring nature should be directed, namely, a higher standard of service to the public. Success in doing this is sure to bring the gas industry public approbation in the form of an increased demand for gas fuel, and therein lie the financial rewards for

Presented at the Annual Meeting, American Gas Association, Atlantic City, N. J., October 20-23, 1941.

you and for me. Yes, we are in business to make money, but the manner in which we make it is supremely important because our business is affected with a public interest.

To put it pointedly, the American Gas Association is the sum of the humans in it. Its efficient operation is one reason for our nation's famed teamwork in business. In the ranks of its membership it inculcates enlightenment instead of selfishness, a generosity on the part of the big fellow to help the little fellow. To all of us it is demonstrating that the main secret of a successful business and a happy life is to climb from retaliation to reciprocity.

The high repute in which the Association is held has been earned to no small degree because of the sincerity, honor and integrity of its members,—in short, the character of its members. Provided it is operated resolutely in a spirit of fairness, justice and equity, we have an organization that will ultimately prevail over all obstacles.

The foregoing naturally suggests a consideration of ethics. How does the Association measure up in this respect? Are its affairs carried on in the light of its moral and legal obligations? Does its organization effort show proper respect for the requirements of fundamentally sound society? Does it conduct itself in accordance with high ethical standards?

My answer to these questions is an unqualified, "Yes." The American Gas Association is an agency of self-government. It is an agency of efficiency. It is an agency of democracy. And it is an agency for the preservation of fair competition.

Since its inception, it has always operated in the light of day and its transactions as well as its financial reports have been matters of published record available to the public as well as to its membership. In all of its operations it has conducted itself in accordance with those ethical standards which are universally accepted today as the measure of honest and enlightened administration.

In the course of an address delivered earlier this year before an audience of fellow gas men, I stated that a great and beneficial change has come over industry in the valuation it now places on public opinion and the effort it is making to create and maintain favorable public sentiment. I then took occasion to point out that our thinking on this subject has advanced so far that should any person in our industry deliberately violate the commonly accepted ethics of good public relations we would consider him to be a menace not only to the gas industry but a liability to all industry as well.

I believe you will agree with me that in the broader concept of public relations which we have come to acquire, we know it is supremely important that we engender good will among our employees, customers and security holders. This, however, does not dispose of all our obligations. There is a larger and much more important responsibility, namely, one involving the continuance of the industrial system under which this nation has prospered and with which all of us together either stand or fall.

Like other national industrial undertakings, if we do not deal wisely with our problems while they are ours to deal with, we may drift on until natural forces compel a solution of them in ways which may spell disaster for us. In other words, if the American Gas Association fails to keep pace with national thinking and changing public policy there should be little criticism if others seize the initiative which our Association cannot or will not assume.

The testing of a trade association comes when it is face to face with adverse conditions. No trade organization is worth its salt if during periods of stress and strain it cannot proceed with its work, borne up and maintained by the unfailing spirit and faith of its members one with another, and therefore, in their organization. Let it be said to the credit of the American Gas Association that it has successfully survived war, depression, fuel shortages and other economic upsets. Through all of these trying experiences the Association's Executive Board has been a tower of strength in directing and limiting the activities of the Association to those immediately the most important.

The people of the United States have declared for a democracy. At the moment American industry is confronted with the serious obligation of demonstrating that an unlimited national emergency can be successfully coped with under a democratic form of government and that our business problems can be solved through cooperative effort and under the functioning of private initiative.

Let us be realistic, therefore, and face the issue. Has the American Gas Association adapted its activities to the changing conditions brought about by the national emergency which is upon us? Is the Association an economic asset today in the nation's business structure? Is it an essential part of the national economy? Is it adequately meeting the special and extraordinary demands of the Government's defense program? Is it operating in the interest of the gas industry's customers and its security owners? To sum it up, is the Association on the job?

The temptation at this point is to become profound and to inflict on you a lengthy and boresome recital of testimony in the Association's behalf. This, I have no intention of doing. Instead, I shall refer in general manner to a few Association activities of national significance and rest my case there. First, I invite your attention to the contents of the printed program of this meeting. Nothing illustrates better what an industry is thinking about and doing and to what end, than a program of its annual meeting. What is the one topic in this program that dominates practically every business session? It is national defense and the gas industry's vital connection with and contributions to this all-out effort. That is our answer to those who inquire what the gas utility men talked about most at their Atlantic City meeting.

And now as to the character of the meeting itself. It differs strikingly from those of other years. We have packed into two and a half days what might normally be a four day affair. We have utilized the efficient device of the panel discussion, thereby securing group concentration on specific problems. In condensing and streamlining this annual meeting we have made it possible for our busy members to attend and return to their jobs at a minimum expenditure of time, thus cooperating directly in the Government's plea for increased man-hour efficiency.

I cannot recall when we have ever come together on an occasion like this without making provision for entertainment. But this time no such preparations have been made, other than the general dinner and the general luncheon. Candidly, we feel we can forego formal entertainment at a time such as this when the citizens of this country have been asked to adjust themselves to the sacrifices that must necessarily accompany an unlimited national emergency. We admit that business as usual is not in the cards, and the program of this meeting amply demonstrates that conviction. Let me emphasize that the members of the Association's Executive Board who planned this meeting did so on their own initiative, without prompting or urging from any quarter outside the industry. They merely sensed the tempo of the times and acted accordingly.

I have previously posed the question, "Is the American Gas Association adequately meeting the special and extraordinary demands of the Government's defense program?" Again I shall not burden you with a detailed accounting but will concern myself with commenting on the high spots only. In what I have to say it is well to keep in mind that when an industry does its full part in supporting national defense, it not only advances and strengthens the cause of democracy but renders a constructive public service in behalf of its employees, customers and security holders.

The Association's record in supporting the Government's defense program is an illuminating one and a source of pride to all of us. As a matter of fact, the Association set up its Committee on National Defense before the war started in Europe. For two years prior to the conflict, Association Headquarters had assembled material that would prove helpful at some future date in view of the irresistible progress toward war. When war actually became a reality, the Association was in the enviable position of already being well prepared to serve its membership, having collected in advance of hostilities much valuable information from sources abroad as well as in this country.

We were among the first to offer the services and facilities of our industry to the appropriate departments of Government concerned with national defense. Past President Beckjord originally volunteered our services on May 29, 1940. On January 22, 1941, I, as President of the Association, renewed this offer and it was gratefully acknowledged by William F. Knudsen. Again, on June 2 of this year, I addressed a letter to the President of the United States, stating that the Association, representing the natural and manufactured gas industries of the United States, welcomed the opportunity to pledge full support to the Government in the national defense emergency. This letter was subsequently acknowledged by F. H. LaGuardia, U. S. Director of Civilian Defense and by Leland Olds, Chairman of the Federal Power Commission.

When the Secretary of War appointed the National Technological Civil Protection Committee, the Association was represented on its membership. Members of the Association have already received valuable material on plant protection produced by this Committee. Our own Committee on National Defense has collected and digested a large amount of source material, much of it coming from places in Europe that have experienced war. In obtaining this information from overseas, the Institute of Gas Engineers, Great Britain, has rendered valuable assistance. In addition, the aid of diplomatic channels has been invoked.

Thus, by anticipating the coming of war and by starting early to collect authentic data the Association has in its possession a large and valuable file on the current war. One of the first tasks completed was a survey of the toluol facilities of the gas industry, subsequently delivered to the U. S. Army Ordnance Department. In March of this year, the Association utilized a questionnaire to obtain valuable information from companies concerning the steps now being taken in this country and in Canada in the protection of plants and employees.

More recently, on June 19th, it was my privilege to submit to Ralph K. Davies, Deputy Petroleum Coordinator for National Defense, a statement on fuel oil requirements of the manufactured gas industry. Our relations with Mr. Davies and with the officials of other departments of the Government handling national defense developments are friendly and cordial. I have no hesitancy in stating that these officials have a high regard for the efficient manner in which the Association is supporting the defense program, including as it does, a consideration of matters affecting the safety and well being of the operating personnel of the gas industry, provisions for continuity of service to the public and other protective measures too numerous to mention here. The public has an important stake in the Association's defense program, although it is blissfully unaware of it.

The same is true concerning the Association's work in dealing promptly and efficiently with growing and pressing needs of gas companies for materials and equipment through priority orders. Of all the measures that have been issued from Washington of a national defense nature, none are more important than those having to do with priorities. The personnel of the Association's Washington office has been increased to handle the additional work and to speed up action on priority orders.

There has been plenty of grief there, due to the enormous flood of applications, and the rapid change of plans and procedure, but we have endeavored at all times to keep the industry informed and to assist in obtaining the materials necessary to assure continuity of adequate and necessary service to the public and to the national defense.

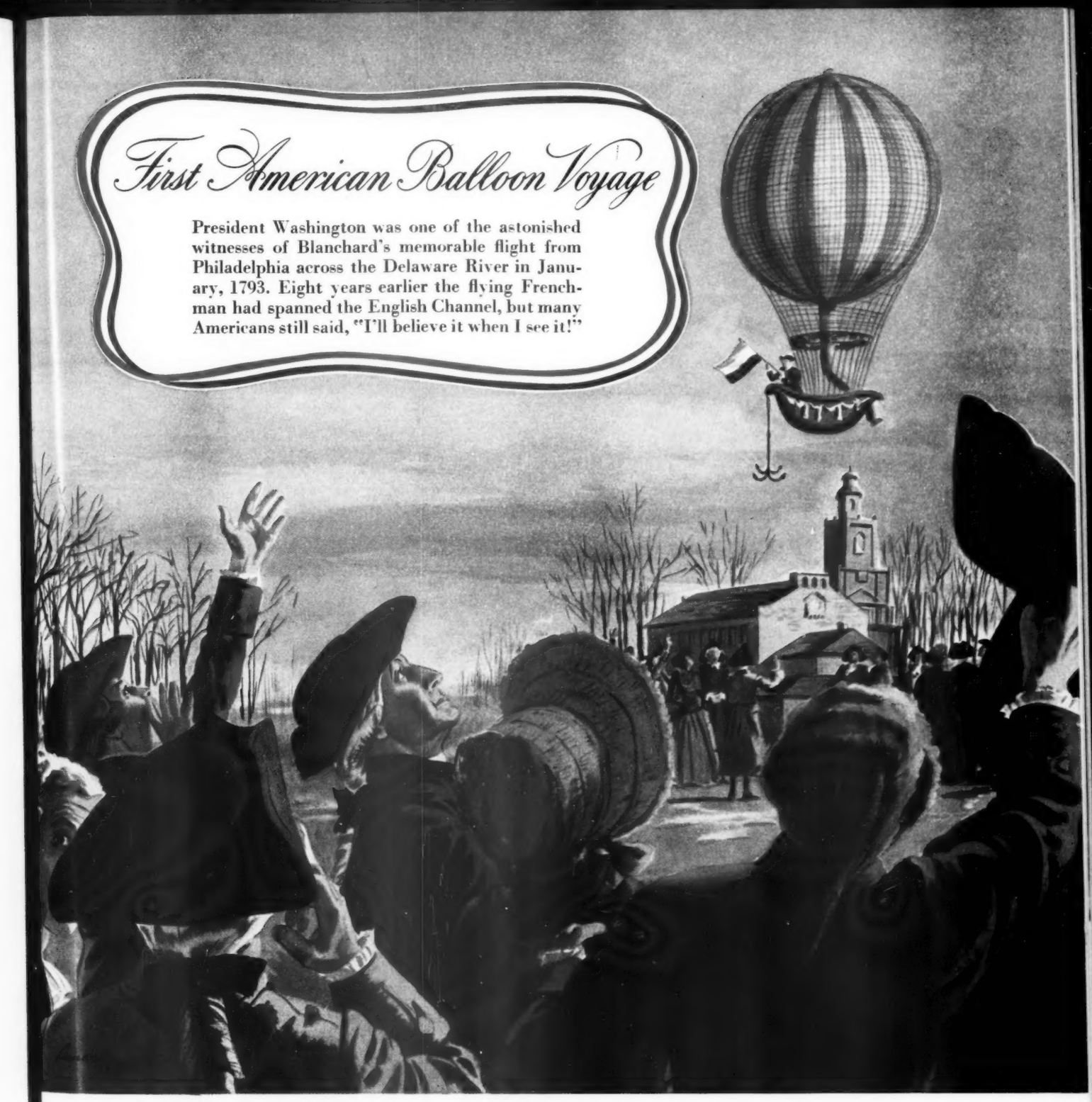
The efficient manner in which our national organization has operated in behalf of the gas industry during this emergency, utilizing the facilities of a competently managed centralized staff, is a noteworthy example of a trade association functioning at its best.

Let us turn our attention to another field of activity. Has the Association contributed anything of a definitely practical nature to the public welfare? All wishful thinking aside, can we prove that the public has actually benefited because there is an American Gas Association? The answer is "Yes." The public which has benefited comprises 18,000,000 customers of the gas industry. And the agency which has operated in their behalf is the Association's Testing Laboratories.

The evidence need only be brief to be conclusive. For sixteen years the gas industry has taken seriously its responsibility for making available to the public gas appliances which are safe, durable and efficient, through operation of the Association's appliance testing program at the Cleveland and Los Angeles Laboratories.

More than two hundred municipalities in the United States have adopted ordinances prohibiting installation of gas equipment and appliances which do not comply with the standards adopted by the Association. The Testing Laboratories constitute the only agency in the country which can economically test gas equipment and appliances against these standards, which have also been officially adopted as American standards by the American Standards Association.

Today public acceptance of gas appliances and equipment which meet these standards has become so extensive that 95% of all such equipment and appliances sold in the United States are A.G.A. Laboratory approved. Even more important is the fact that the decrease in deaths and accidents in the United States resulting from gas poisoning has been commensurate with the development of the Association's appliance testing program. This is demonstrated clearly by the records of the Bureau of the Census which show that since the Association's Laboratories were established the annual accidental deaths due to the absorption of deleterious and irrespirabel gases have dropped 50% in the United States. During the same period the operating efficiency of residential gas appliances has been elevated from 25% to 50%.


First American Balloon Voyage
President Washington was one of the astonished witnesses of Blanchard's memorable flight from Philadelphia across the Delaware River in January, 1793. Eight years earlier the flying Frenchman had spanned the English Channel, but many Americans still said, "I'll believe it when I see it!"

H. Harper Wyman Co.

Nothing convinces like demonstration

AMAZING, too, to countless housewives is your demonstration of the Harper Burner System. Here is a way to better cooking with less work ...greater freedom... lower fuel bills. Every woman wants these advantages. Why not *show* them to her, and make her *want* a modern gas range?

Actual demonstration of Harper's "2 burners in 1" quickly proves their unique advantages... the time-saving speed of the STARTING BURNER...the fuel-savings of the tiny, efficient COOKING BURNER ... the many additional comforts and conveniences offered exclusively by Harper control...

Connect a Harper-equipped range on your sales floor! Sales go UP when you *demonstrate* that "Gas does it best".

DEMONSTRATES THAT "GAS DOES IT BEST"

HARPER
BURNER SYSTEM

TURN THIS PAGE FOR PROOF THAT DEMONSTRATION PAYS

This whistling tea kettle will help you sell more ranges . .

STEP 1. Put water in whistling tea kettle (with built-in thermometer*) and bring to boil on a Harper-equipped range. Turn Harper Burner on full (STARTING BURNER) and kettle will whistle loudly. Show customer that water is 212 degrees, boiling heat.

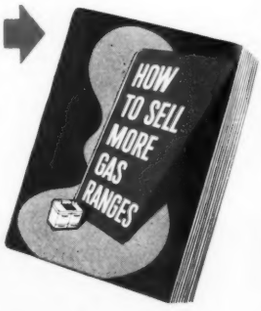
STEP 2. Reduce STARTING BURNER to its *lowest* flame. Kettle will still whistle. Point out that this is *lowest* flame to which any ordinary burner is usually reduced.

STEP 3. Turn handle farther down, to click position, and let customer see tiny flame of COOKING BURNER . . . *a lower heat than that of any ordinary burner*. Whistle now stops, showing sharp drop in gas consumption. But point out that water is still 212 degrees!

STEP 4. Explain that this small flame keeps water boiling, foods cooking efficiently, with less gas flow than any other burner . . . helps cut fuel bills up to 39%!

**This whistling tea kettle can be obtained from Harper-Wyman Company for $2.50.*

This demonstration is condensed from our new **FREE BOOKLET,** "How to Sell More Gas Ranges." The booklet contains eleven other practical floor demonstrations. Have you sent for your copies? *Harper-Wyman Company, 8562 Vincennes Avenue, Chicago.*



STONE & GUNVALDSON
THE HOME OF GOOD HARDWARE
PHONE 20
New Rockford, North Dakota

March 27, 1941

Mr. C. W. Bischof
Copper Clad Malleable Range Co.
St. Louis, Mo.

Dear Mr. Bischof:

You ask if we demonstrate Copper-Clad Ranges. We certainly do - to practically every woman who comes in. We have had a range hooked up with gas for many months. And it gets results.

Just yesterday, for example, I got a letter from a woman in the southern part of the State, enquiring about the installation cost of a range with Harper Burners which we had demonstrated to her several days before.

We find it pays to demonstrate to every customer whether she seems to be an immediate prospect or not. And we find this: demonstration always makes the price seem secondary.

Very truly yours,

STONE & GUNVALDSON

Howard L. Stone

Proof That Demonstration Pays

The Harper Burner System operates on the unique principle of a burner within a burner . . . "2 burners in 1" . . . both controlled by the same handle. It is subject to finer gradations of low heats—greater control and economy than any other cooking unit made.

HARPER BURNER SYSTEM

—one of the standards of top burner performance under CP

Much publicity has been given to the consumer movement. The Association's Laboratories pioneered in this movement, and they anticipated by years the demands of consumers for specific product information to serve as a buying guide. Through its Laboratories, the Association has sponsored a project which conforms with enlightened public policy and sound public relations; and the benefits derived by the public and the gas business are becoming progressively more evident as time elapses.

To prove my point that the Association is responsive to the particular demands of the times,—that *it is on the job*—what more can I say that you do not already know? There is the national advertising program, now in its sixth year, designed to create an increased public appreciation of gas fuel and the superior performance characteristics of strictly modern gas appliances. It is a high-class institutional, prestige-building campaign free of the dollar sign, trade symbols and other commercial devices.

The other day the home appliance editors of some of the most influential magazines asked the Association what kind of information would be most helpful to the homemakers of the nation at this time. The answer came in the form of six pages of practical, down-to-earth suggestions under the general title of "How to Take Care of a Gas Range and How to Get the Most Out of It." But other information was also forwarded—data on adequate diets, better balanced menus, how to buy food wisely, how to use the cheaper cuts of meat and so on. Those are some of the subjects home service is emphasizing today when household budgets are being strained, and it is but another example of adaptation of an essential service to the specific needs of the times.

As one of the last official acts of my administration as President of the Association, I am proud of the opportunity of presenting an address of this nature. Membership in the Association is to me, as I am sure it is to you, a badge of honor, a proof of ambition, and a guarantee of professional consciousness.

There are two indestructible forces in the business world—organization and the capacity to work together for the common good. These may be joined with intelligent direction to make a trinity of power for advancement in any business enterprise. Such is the progressive manner in which the American Gas Association has functioned. That is why it has proven for twenty-three years to be a stabilizing influence in the gas business.

Today, 90% of the gas fuel sold in the United States is represented by company membership in the Association. I regret that the figure is not 100%. No gas company imbued with true industry consciousness can afford to be a non-cooperator. As a matter of fact, the problems facing all business today will require, before they are solved, a more intimate cooperation. Individualism, if persisted in, will but further delay the return of normal conditions. The crying need of the moment is for industrial solidarity.

In behalf of the American Gas Association and its planned program of action, which I have demonstrated is in step with the spirit of the times, I respectfully solicit your continued support. I do so in behalf of the best interests of the gas industry, its customers and its security holders, and, therefore, in the best interests of the public. I do so in behalf of the Association's resourceful and experienced Executive Board. I do so in behalf of an efficient Headquarters Staff, capably managed by our own respected and beloved Major Forward. Finally, I do so in behalf of the continuance of the system of private initiative under which the gas industry has come to be acknowledged as one of the key industrial enterprises of America.

British Gas Industry Regarded as Vital to Defense

At the Annual Meeting of the North British Association of Gas Managers on September 5, 1941, the Right Hon. The Earl of Rosebery, D.S.O., M.C., Regional Commissioner for Scotland, remarked as follows:

"I am afraid that before the heavy bombing of our cities began many of us took the supply of gas for granted. We were only vaguely aware of the organization and careful planning that lie behind it. Certainly few of us realized how important a place the service occupied in our daily lives. We had to be temporarily deprived of it to realize that. An experience such as that of Coventry gave a sharp jolt to the Government, and those responsible for the Civil Defense Services. To lose gas is commonly to lose vital production in the factories and cooking and heating facilities in the homes. If the service were not restored quickly the war effort would be seriously weakened alike from the point of view of loss of production and, what is perhaps more important, loss of morale. The Government did well, therefore, through the Board of Trade, to take steps to ensure that every possible help would be given to a stricken area in this as in other respects.

"I have no doubt that you are all aware of the mutual aid schemes which have been devised in the various Regions for the repair of war damage to gas undertakings. In Scotland the mutual aid scheme has been interlocked with the Civil Defense organization which, as you know, consists of five Civil Defense Districts within the Region. An undertaking which suffers damage first relies upon its own resources, but, if necessary, it can call in the help of other undertakings in the immediate neighborhood through a group leader or through the District Gas Engineering Adviser. In the last resort help can be thrown in from other districts and, if need be, from other Regions. I have no need, however, to describe the scheme in detail to a gathering like this. What I do want to say is that the scheme is not merely one on paper. It has been tested both on a large scale on the Clyde and on a smaller scale elsewhere, and in every respect, it has 'delivered the goods.'" (*Gas Journal—London.*)

Germany's Efforts to Secure Oil

Reports from Europe indicate that Germany faces a difficult choice if the campaign against Russia is intended to increase the Nazi oil supply on any large scale.

Most helpful to Germany would be capture of refineries in the Lemberg area of Poland, which were not damaged in the 1939 campaign. However, the equipment might be destroyed by the Russians before the Germans arrived. On the other hand if the Germans capture the oil area of the Ukraine, Don River, and Caucasus, where refineries certainly would be destroyed by the Russians, they would gain only supplies of crude oil, and would face difficult transportation and refining problems.

It is believed that if the Nazis should capture both the Polish and Ukraine areas, Russia still would have interior fields and refineries capable of meeting large needs.

American Petroleum Institute

England—Its Civilian Protection and Gas Utility Operations in War Time

By
Davis M. DeBard
Vice President
Stone & Webster Service Corp.
New York, N. Y.

Davis M. DeBard

WHEN this war is over a story of heroism and devotion to duty will be written about the gas employees of the English gas companies. Many have been killed in their line of duty and a great many more have been injured. When their homes were bombed during the night, the majority reported on time for work the next morning. When their families moved from London and other congested areas, they remained to carry on. The trials and the triumphs of the British gas industry as it has daily gone about its task of maintaining service to its customers in thickly populated areas and to the defense industries, under the constant destruction of the Nazi blitz, is another story which we shall some day read with great pride. The English people, as a whole, have gone forward with indomitable spirit, but we should all be especially proud of the devotion to duty of our utility brethren who have maintained service under the most trying conditions.

The population of England and Wales today is about 40,000,000. Distances are short and towns are close together and congested. Some 1,000 gas companies serve this area with 530 Btu coal gas. There are some 10,000,000 gas customers and some 60,000 men and women serving as workers in this great industry. Sixty-four per cent of the meters are prepayment, the balance are regular meters read on a quarterly basis. Prewar wages and coal prices were lower than in the United States; thus, rates on the average were lower.

When this great industry found that war was inevitable, what did it do for its protection? First, it set about to train its employees, from office boy to president, in just what

part they must play when plant and distribution system suffered from fire and bombing. I observed some of these training classes at the British Gas Light and Coke Company field laboratory, the Watson House, where several hundred employees were placed at windows on 2nd, 3rd and 4th floors of adjacent buildings while actual bombing, in an open field, was carried out on gas mains which, after the explosions, set fires in a number of dummy houses. Valves were turned to shut off gas and different methods of fire fighting were demonstrated and repairs were started. This was to give the employees a first-hand picture of actual bombing conditions. This training was, of course, carried on for many months and the many thousands of employees in this one large gas company knew exactly the part they were to play under bombing conditions. Second, various types of camouflage were used to make plants more difficult to spot from the air. This was worked out in conjunction with the British Air Force which made observation at various levels. The usual fencing of property, additional guards, a pass system for employees and other methods of protection were resorted to. Third, distribution systems were interconnected with other gas companies wherever feasible. This interconnection has proved of great value in maintaining service. Spare parts were purchased and placed in bomb proof shelters. The entire system, including the plant, had many hundreds of additional valves installed so that small sections could be isolated quickly and easily. Retaining walls were erected around vulnerable spots and asbestos suits were placed where they could quickly be used in turning off valves menaced by fire, and in plugging breaks to extinguish fire in bombed distribution mains. Sand is kept available in buckets to extinguish the fire bombs, and there is the so-called stir-pump, which, when placed in a bucket of water, and hand operated, throws a small swift stream of water. These are very effective in putting out fires in early stages.

Although bombs have pierced many holders, causing loss of gas, they have not caused explosions. Some holders have caught fire, but fires were speedily extinguished. Holders can be quickly repaired and put in operation again. London is served by a number of gas companies which have pooled their repair gangs and stock of supplies and established a central office for information.

Water-sealed holders are the types which have stood up best. Other types have been abandoned for the duration of the war. Many companies have strengthened their communication systems by using two-way radio and additional emergency phone service. Employees are used in shifts during the night for fire spotting.

From all accounts very few gas plants have been put out of commission and the damage done by bombs has been speedily repaired.

It is reported in the great bombing of Coventry, that the gas works was hit four times but never ceased production and that service was restored in some cases by laying pipes on top of the ground a short time after the

Presented at the Annual Meeting, American Gas Association, Atlantic City, N. J., October 20th, 1941.

all-clear signal sounded. The manager of the Coventry plant jokingly said that with just a few more bombings he would have a much needed new plant.

It is reported that sand bag protection is of great value. The sand must be dry, the bags filled from one-half to two-thirds full and ends turned over and not tied, so that when piled together they will form as tight a wall as possible. Thus, they offer the greatest resistance to impact. Most of the protective walls placed around vulnerable spots are of brick, some 20 inches of thickness, and of sufficient height to protect apparatus from falling timbers. It has been found that bricks made out of ashes are particularly good, because instead of brickbats flying in all directions, fragments tend to pulverize. It is reported that bombs of from 100 to 500 lbs. will make craters in the streets from 10 to 15 feet in depth. Water and sewage pipes will be broken at a distance of from 30 to 50 feet from the point of direct impact. This is due to the earth shock. Many electric and telephone cables have been found to stretch and not break under such impacts. One great difficulty in these craters is of water and sewage getting into gas mains, but so expert have the repair crews become in the handling of this damage that gas is quickly shut off, mains pumped dry and sewers shut off or shunted so that the drinking water is not contaminated. A quantity of chlorine is generally inserted in the water main where these breaks occur.

English buildings are largely made of brick and many of them have been standing for years. These buildings have been particularly subject to lateral bomb shocks. Such buildings as have been framed with steel, similar to those commonly used in the United States, are little damaged. Steel girders seem to give and bend and only the walls and partitions are damaged. In the building up of London's bombed areas in the business sections, steel construction doubtless will be required on account of its ability to withstand air attacks.

There is one lesson that our natural gas systems, with their long pipe line transmission, might learn from the preparations made by the British electric grid for maintaining service. Before the war started the grid purchased some $10,000,000 worth of operating equipment, such as transformers, switching apparatus, copper wire and other essential parts and stored this material in bomb proof shelters in various sections of the country easily accessible. After two years' bombing, it is reported that repairs have been made with such speed that comparatively few customers are without service within a 24-hour period.

I do not wish to convey the idea that there is likely to be bombing of our natural gas systems, but I do feel that preparation should be made against sabotage which we are likely to experience. I cannot find that there has been any case of sabotage reported in either the gas or electric companies of England, but the cross section of their population is different from that of the United States.

From newspaper accounts it is reported that one out of every fifteen houses in England has been damaged and that approximately one out of every 100 has been made uninhabitable. Anti-aircraft guns are responsible for some of this damage. In the case of Clydebank, Coventry and Plymouth, it is reported that more than 60% of the homes have been damaged during air raids. In London some 73 major hospitals have been hit and 43 entirely demolished. More than 1,000 London churches have been severely damaged.

From all reports, factory production has not been greatly harmed by the blitz. One report claimed that after the bad bombings last Spring, production had only been affected by 5%. It is the plan, when factories in congested areas are damaged, that they be moved to country areas and constructed in smaller units, thus lessening the risk from air. From all we are able to learn, production of war materials is at a very much increased rate over six months ago.

In addition to all of this damage which the gas employee and the utility has had to cope with, there has been a tremendous shift in population. In London, a city of some 9,000,000, more than 27% of the total population has moved to other parts of England. This shift in population is particularly true of the East Coast area, a portion of which has been evacuated for military purposes, but principally workers have moved to obtain employment in the factories in the west and in the interior.

Due to the increased cost in operation, the majority of the gas companies have increased their rates, mostly on a percentage basis. For a long time in England, the Commission has permitted an increase or decrease of rates based on a fixed percentage of earning. (Washington Plan so-called here in U. S. A.) Thus, in war times the companies can more quickly secure relief than would be possible if operating in the United States.

Forty-three per cent of the operating electric utilities have made increases in rates, but the output of electric companies has been greatly increased due to the large number of war factories operating on a 24-hour basis.

All important contracts and documents held by the gas utilities have been duplicated and filing is done in three separate areas for protection. This, in itself, must have been quite a problem for the utilities.

So far as I am able to learn there have been no restrictions placed on the use of gas or electriicty. Rationing was discussed at one time but found impractical so no restrictions apply at the moment. The production of gas and electric appliances, however, has been restricted. First, a wholesale tax of approximately 25% was placed on all new equipment. This tended to reduce the output. Next, priorities on material of appliances manufactured were made so rigid that no production was possible except for hospitals, emergency canteens and army requirements. One interesting thing, however, is that all factories are permitted to produce repair parts for appliance and plant on a number one blanket priority rating. Thus, appliances in bombed homes have been quickly repaired and moved to those areas which have increased in population. This is a very interesting point as priorities with us are becoming more and more acute, but, if we could be permitted repair parts, we would be able to carry on.

Damage to plant and distribution systems by air raids is paid for out of a special insurance fund, 50% by the Government and 50% by a mutual insurance fund contributed to by all gas companies. The damage to the workers' homes is taken care of through a similar insurance scheme which permits quick relief to those in the lower income class. Every worker and every company employing workers must have an air raid shelter. These shelters are not a protection against a direct hit, but are a protection against lateral forces. The so-called Anderson shelter consists of a U-shaped galvanized iron sheet placed up-side down in the ground and two galvanized ends, giving a space 4 by 6 feet, in which the family is supposed to go during air raids. These were never intended for the family to sleep in but due to the long night raids much suffering was encountered in these cold, damp shelters. One of the latest shelters, called the Morrison, is a large reinforced kitchen table 8 by 5 feet, so constructed that it can with-

stand the weight of the walls of the house should a direct hit occur. Families can sleep under these kitchen tables with a great deal more comfort than they could in the Anderson shelters.

Many different kinds of shelters have been constructed, some by reinforcing the walls and ceiling of one room and others by underground concrete outside shelters which are provided with heat and lights. Thousands used the subways to sleep in during the intensive blitz. The Government, during the past year has made considerable headway in constructing better air raid shelters. Certain new subways are being constructed to be used as sleeping quarters until the war is over. Food is provided in many of the large public shelters.

In addition to the explosive bombs, one of the greatest problems is the magnesium fire bombs which weigh about 2¼ lbs. each. One airplane can carry about 1,000 of these fire bombs. In falling from the plane they are of sufficient weight to puncture the roof and explode in the attic, the molten substance scatters and spreads, making a very difficult fire to fight. It is recommended that attics be cleaned of any inflammable material and two inches of sand or ashes be placed over the floor. In London during the blitz, there were 1,800 fires going on at one time. Thus, a tremendous effort, not only by the regular fire department, but by its population, had to be exerted. Where they had 3,000 fire fighters in London before the war they now have 30,000 regular firemen. The utility employee, besides his regular duties of trying to take care of his home and family during air raids, is subject to fire spotting duty, auxiliary fire fighting, first aid, the home guard, air raid warden. No compensation is given for any of these jobs, except that on a fire watch during the night a *free* breakfast is provided. Gas employees who are color blind are wanted as observers by R.A.F. They can see through enemy camouflage. Camouflage is no barrier to the color blind.

Labor has been cooperative to the point that the strikes have been eliminated during the emergency. Differences are settled in pre-war manner by conferences. Failing in this, the matter is brought up to the Arbitration Board whose findings are final. The hours of labor have increased, now being some 56 to 60 hours per week per worker. Total earnings thus have increased approximately 30%, largely due to the additional hours. Some 3 out of 18 million workers wages are adjusted by the Cost of Living Index. It has been found that workers can produce more by having one day off in seven.

Women have been called up for registration up to the age of 31. They are being used more and more in all gas operations. Some are being used as stokers. One interesting thing is that the pay for women is the same as that for men on the same duty after a short apprenticeship.

Taxes are extremely high, a single gas employee, earning $2,000, pays a total of $850. A married man, earning the same amount, pays $650 in taxes. Very little is left for the employee after his taxes and living necessities have been paid.

Home Service Departments have played a very active part in demonstrations and publishing cooking recipes for the better use of rationed foods. They have also taken an active part in the set up of emergency canteens and cooking centers. The English people have not taken kindly to these cooking centers as they much prefer to eat at home or in smaller groups. Many arguments have been advanced that foods can best be handled by large restaurants but this has never appealed to the people. The Ford Motor Company recently made a donation of $1,000,000 worth of portable kitchens which can quickly be transported from one locality to another when needed. At the beginning of the war much food and grain was stored in underground cellars, particularly prepared for this purpose.

This year, more than 4,000,000 additional acres of grass have been plowed and put into cultivation for the raising of potatoes and home grown vegetables. Rabbits are being raised for a meat substitute. Beef and pork and fruits have been very scarce and the rationing card now calls only for the equivalent of one chop per person per week. This is a hardship on many of the hard working gas employees. But in spite of this drastic shortening in rations, the health of the gas industry's workers and that of the average citizen has been better than pre war. This certainly is a compliment to the health authorities and their thorough handling of sanitary and public health matters.

All employees and the population live in fear of poison gas attacks. Continual training and preparation is being conducted to meet such attacks and with all of these problems the gas workers continue to maintain service and the people of England continue to carry on with an undaunted spirit.

Thus, life goes on with a courageous people. Thus, a great industry continues to maintain service.

In Conclusion

On completing this survey of the activities of the English in the face of a great crisis in which our colleagues in the gas industry are playing their own heroic role, one's mind travels quickly back across the Atlantic to our own country and to the American gas industry which is now preparing for whatever crisis it may have to meet in the future. It is reassuring to see that every effort of gas companies from coast to coast is being closely related to the national program of defense, that we have been aroused to the necessity of preparation in the most minute detail for whatever may come and that each day's demands finds the industry increasingly alert.

The comparatively minor disagreements which seem to separate us at times will not in the final issue, I am confident, swerve us as a united body, from the defense of a country and of those social, economic and political principles in which we believe. I am confident, too, that under equal duress, the personnel of the gas industry in this country will show the same determination to carry on, the same unthinking bravery which has been proved by our English friends.

We cannot escape nor would we escape from believing in and fighting for the ideals which have made us freemen of the United States of America.

Half way through the brief history of our own country, Lincoln expressed in his own simple, direct way what should be the universal prayer of us all. He said, "Let us have faith that right makes might; and in that faith let us to the end dare to do our duty as we understand it."

Pennsylvania Natural Gas Men's Association

The October meeting of Pennsylvania Natural Gas Men's Association was held October 30 at the Pittsburgh Athletic Association.

Following a dinner, Mr. W. S. Redpath, Manager of Sales Promotion of Equitable Gas Company, addressed the meeting on "Highlights of the 1941 Convention of the American Gas Association."

These monthly dinner meetings afford opportunity to keep alive contacts within the industry in Pennsylvania and to discuss various problems.

B. H. Smyers, Jr. is Secretary of the Association with headquarters at 435 Sixth Avenue, Pittsburgh.

The Brooklyn Union Gas Company

A Pioneer in Preparations for National Defense and War Emergencies

ON THE MATTER of why the recruiting of a defense corps and preparations for emergencies should be particularly important in the Brooklyn area, we can do no better than to quote Mr. Clifford E. Paige, President of The Brooklyn Union Gas Company.

"Our company serves an area containing nearly 3,000,000 people. While only a part of New York City, this area alone is the equal of most European capitals. A great navy yard, two key airports, miles of wharves, hundreds of defense industries, and, above all, hundreds of thousands of homes—all these depend upon Brooklyn Union for some part of their vital fuel supplies.

"Should our country become involved in war, this territory would be the first visited by enemy bombers. In any event, the next few months and years will confront us all with extraordinary demands.

"That is why we have formed The Brooklyn Union Gas Company Defense Corps. Employees, physical and clerical workers alike, are volunteering for service in neighborhood units. They are learning the newest methods of stopping gas flow from broken mains. They are being trained in air-raid precaution work, crowd handling, prone pressure and first aid.

"Our Defense Corps will achieve —I may say is already achieving— a dual purpose. This great volunteer group of employees, trained to supplement regular street and service crews, will help our company not only to meet the potential crisis of war but also to meet any emergency conditions that may arise.

"Thus, the Defense Corps is more than an immediate precautionary measure. It is a timely vehicle by which to increase general employee knowledge of our business and thereby to improve our efficiency for the years to come."

Here is the plan as outlined by Mr. G. F. B. Owens, Assistant Vice President and Chairman of the Defense Committee.

"1. Facilities for establishing and maintaining close cooperation between the company's defense activities and those of the civil authorities.

"2. A Defense Corps, consisting of employees who have volunteered and who will undergo special training calculated to prepare them for emergency service.

"3. Thorough examination of our manufacturing facilities to provide the greatest possible flexibility of operation and plant protection.

"4. Comprehensive study of our distribution system and of methods for stopping the escape of gas under all conceivable conditions. Also study of technique for affecting even more speedy repairs.

"5. Plans for protecting office buildings and the large numbers of employees concentrated in such buildings."

A call was sent out for volunteers to enlist in the Defense Corps. On October 10th The Brooklyn Union Gas News reported:

"So many already have volunteered that the company's Defense Committee this week decided to advance its schedule and to begin the appointment of captains at once. It is expected that appointments will be announced in next Friday's Gas News.

"In view of this fact the committee urges that all who feel themselves qualified to take leading roles volunteer immediately, so they can be considered for appointment. In general, the captains will be selected from among the men in the Manufacturing and Distribution Departments.

"However, the Defense Corps organization will require men with different types of experience and training, so all employees who wish to serve are urged to enroll.

"In answer to the question as to how much time will be required of volunteers, the committee announced this week that it is undertaking to arrange so that all instruction and training will be given during working hours. Thus, even those whose leisure hours are crowded with other activities should feel free to enroll.

"Girls can serve in the Defense Corps now being formed—and their opportunities for service will be just as great as those of men.

CLIFFORD E. PAIGE
President
Brooklyn Union Gas Co.

"Women employees who volunteer will be trained as First Aid Specialists, as Clerical Assistants and for other positions in the defense organization."

The organization of the Defense Corps has been described by Mr. W. H. Weber, Assistant Engineer of Distribution and Co-Chairman of the Defense Committee as follows:

"The Brooklyn Union Defense Corps is being organized on the basis of the Police Department's precincts. There are 34 of these in the Company's territory. In each precinct a volunteer squad of company employees will be organized, its size depending on the size of the precinct and the amount of company property within the precinct.

"Each squad will be headed by a captain who will be responsible for the organization and training of the squad. The captains will be men from the Manufacturing and Distribution Departments who are familiar with work on our property located in the streets. The captain of the squad will have a map of his territory on which are shown governors, valves, and high and low pressure mains. The squad will be provided with valve

GEORGE F. B. OWENS
Assistant Vice President and Chairman of Defense Committee

WILFRED H. WEBER, Asst. Engineer of Distribution and Co-Chairman of Defense Committee

JOSEPH F. MILLER
Inspector Construction Department

CLYDE E. CHEESEMAN
General Superintendent Greenpoint Works

keys, wrenches, rope, and flashlights.

"The 34 squads will be grouped into defense areas, each under a supervisor who will be an administrative man responsible for the functioning of the squads of his various captains. The area supervisors will be responsible to one top operating man or person designated by him. Each group will have a second in command to carry out necessary duties in the absence of his immediate supervisor.

"The men in the squads will be trained in first aid, particular attention being given to prone pressure and the care of burns. They will also be instructed in the duties pertaining to shutting valves and meters, roping off areas, and handling spectators. They will be taught how to stop gas flow by every means within the limits of the equipment with which they will be supplied. They will also be taught whom to call and how to report damage.

"As soon as the regular operating force reaches the scene, the Defense Corps personnel will make themselves available for work assigned by the operating supervisor and the completion of the work will then pass over to the operating department."

Regarding the protection of offices and personnel, Mr. Joseph F. Miller, Inspector, Construction Department, says:

"In our planning for commercial properties an effort has been made to evolve a basic pattern which would be applicable to all important offices. What follows is a discussion of how this plan would apply to the company's central office at 176 Remsen Street, Brooklyn.

"Recommendations for emergency procedure are divided into three groups. Group No. 1 represents those activities which should be placed in effect immediately. Group No. 2 consists of precautions to be adopted at some later date if and when the city might be threatened with an air raid. Group No. 3 includes precautionary measures to be taken during an actual air-raid emergency.

Immediate Precautions

"A locked metal locker should be installed on or near the roof or at other locations as specified in the recommendations for a particular building. It should be fireproof and large enough to hold the following equipment:

One stirrup pump with 20 to 30 feet of hose and nozzle

One asbestos blanket

Two pairs asbestos gloves

Two wooden scoops with short handles for spreading sand to snuff out a flame

One wrecking bar, four feet long

Two helmets and eye protectors

One first-aid kit with ample equipment for treating burns

Two emergency electric lamps

In parking lot adjoining company's Gas Mart, supervisory men witnessed demonstration of different techniques for stopping the flow of gas in a broken main. Above, spectators are watching a gasoline-driven pump force heavy grease into a main to block the escape of gas.

Here is the portable gasoline-powered unit, complete with tank holding 150 lbs. of heavy grease, which was used to force grease into broken main. In actual emergency, pump would be connected by hose to a customer's service near meter. Chief advantage of method is that no time is lost in digging. Pump can force 60 lbs. of grease—enough to block a 6" main—in 4 to 5 minutes.

One asbestos suit

Three water and three sand pails

A quantity of sand should be stored in the basement or any other convenient place in the building

"Key employees should be instructed as to the defense plan developed for conducting all personnel to safety zones in the building. It will be the job of these employees to familiarize themselves with the number and location of the exits and the particular safety zones. As an means of acquainting and reminding all employees of the exits, a typical floor plan will be placed on the bulletin boards.

"The men chosen as leaders should receive thorough instructions in first aid. The quantity of first-aid equipment will be increased at each location. This extra equipment may be added to that already stored in the emergency locker.

"All main control valves on water, steam, and gas should be checked periodically to assure their easy and complete operation. The mechanical force in the building should know thoroughly the location of valves controlling these services.

"In the case where gas service is controlled by cocks, box wrenches should be provided to fit cock stems, these wrenches to be hung on or near the control cocks.

"A system of identification cards, similar to that used at plant properties, already is being employed. Employees entering the building after regular business hours must present identification cards for admission and sign the daily register.

"In the parking space there is a man detailed as park attendant to direct the parking of cars in the rear of the building and maintain a careful inspection of all vehicles entering the space.

Group No. 2 Precautions

"The precautions to be taken at a time when the danger of an air raid appears imminent follow:

"A quantity of sand and bags should be stored in a bin on the roof. This sand is in addition to the sand in the basement, referred to previously, which is to be used for putting out roof fires.

"Sand pails and water pails should be hung on wall racks throughout the entire building. This equipment will be used by the patrol in fighting fires from small incendiaries which might penetrate the building through a window.

"Sandbag protection will be provided for skylights and ducts on the roof, and if determined necessary, a reinforcement to support the added weight of sandbags on the roof will be installed.

"In order to safeguard communications, it might be feasible to locate the telephone department in a more central location in the building.

"During these critical hours a roof patrol of three men should be maintained, made up of the Building Supervisor, a Mechanic and one other member. This patrol will be entirely familiar with the material in the equipment lockers and its use. Each member of the patrol will have a key to the equipment locker. It will be the duty of these men to fight to the best of their ability any incendiary bombs that may fall on the building.

"A continuous patrol of the building during the emergency should be maintained to discover any fires which may result from an incendiary bomb penetrating the building through a window. This patrol, consisting of two men, will carry a small hand pump with 30 feet of hose and the correct spray nozzle for their purpose.

An Alarm Sounds

"Precautions to be followed at the time an air raid alarm is sounded follow:

"Gas service should be shut off at the street cock or stop valve on the street side of the meter.

"Boilers should be relieved of pressure by lifting the safety valves, fires pulled and the coals quenched. Electricity and water will not be shut off unless necessity indicates.

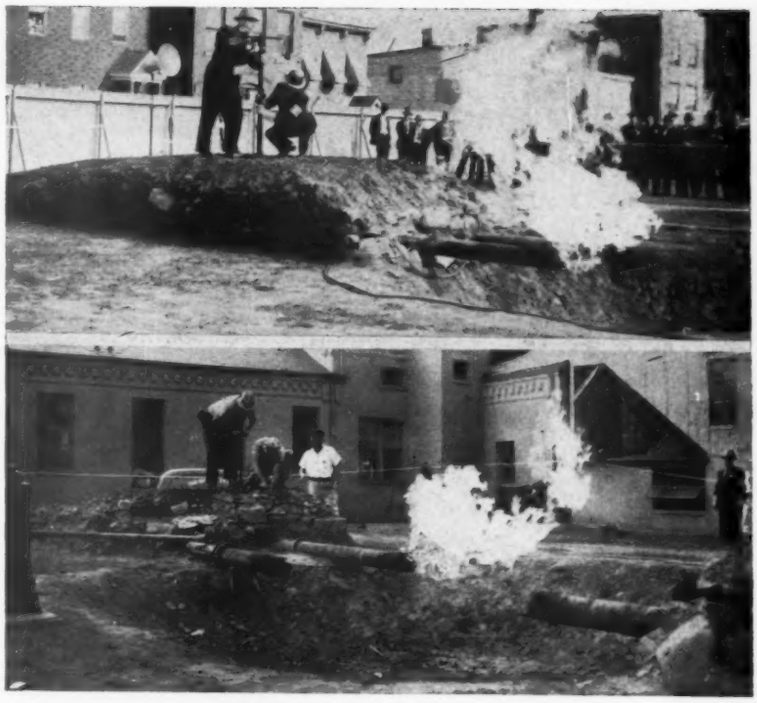
"Members of the roof patrol will proceed immediately to their stations.

"The personnel in the building will be notified to proceed to safety zones.

"In connection with the above recommendations there has been worked out a procedure for handling the personnel in the building during the emergency. These are the basic elements:

"Safety zones are set up on certain floors of the building. There will be persons on each floor designated as directors of the personnel on that floor, whose duty it will be to see that employees are safely conducted to the safety zone according to the plan laid out. Elevator operators will be thoroughly informed as to their duties when an alarm is sounded.

"The whole procedure has been drawn up with the idea of using to their fullest efficiency all the stair wells and other avenues through the



Top: Simplest method of stopping escape of gas is to close a valve. Here Brooklyn Union's Defense Corps members are showing how it's done (after first checking with Load Despatcher to make certain that closing of valve won't cause additional trouble).

Lower: Another method consists of bagging the main. In this technique a rubber bag is inserted in the main through a 1½" standpipe and inflated. Before this method could be adopted as standard procedure it would be necessary to install standpipes at frequent intervals along each main.

Top: Here an asbestos-suited gas man uses a cone-shaped plug on the end of a long pole to plug a break.

Center: A closeup of the asbestos-garbed worker inserting the plug into the main.

Below: Another view showing flames extinguished as plug stops escape of gas.

building. It will provide for the conduct of personnel to safety zones with a minimum of confusion and, most important of all, in the fastest possible time."

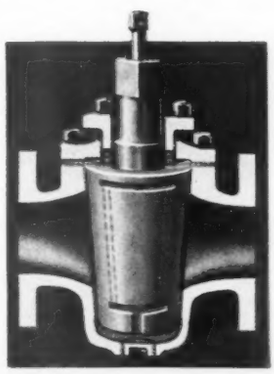
At the manufacturing plants, Mr. C. E. Cheeseman, General Superintendent of the Greenpoint Works states:

"Carefully compiled and fully detailed instructions as to property protection have been issued by vice president Hugh H. Cuthrell and are rigidly enforced in this department. Briefly it may be said each employee is provided with a photo-identification card bearing his signature. This card, which is enclosed in a sealed plastic container, must be displayed on entering or leaving the property and a photo-identification badge must be prominently displayed on the person at all times. Distinctive badges of yellow and red are provided for visitors and contractors' men, respectively, who have been properly identified and granted permission to enter the plant. These badges must be worn at all times and surrendered on leaving. Signatures must be placed on the daily register on entering and again on leaving. Deliveries are inspected and checked before being brought into the properties.

"After careful investigation a man of special qualifications was selected to head the protection and watchman forces of the plants and holder stations. He is a retired lieutenant of the New York City Fire Department and a World War Veteran. At various hours of the day or night he pays visits to the operating properties. He knows personally how the plans for

"Right then, I would have given $10,000 for a NORDSTROM!"

"The valve on our main high pressure gas transmission line hadn't been closed for months. Torrential rains had undermined the line at the outskirts of the city. The line broke and the town was in jeopardy, with gas belching forth. I phoned to close the main valve. Back came the ominous report, 'It's frozen. Can't turn it off.' I had to send men miles down the line to the next cut-off. Right then I would have given $10,000 for a Nordstrom. Fortunately, we got the line under control after a tortuous delay, but it taught us a lesson. We've replaced those old valves with Nordstroms all along our various lines."



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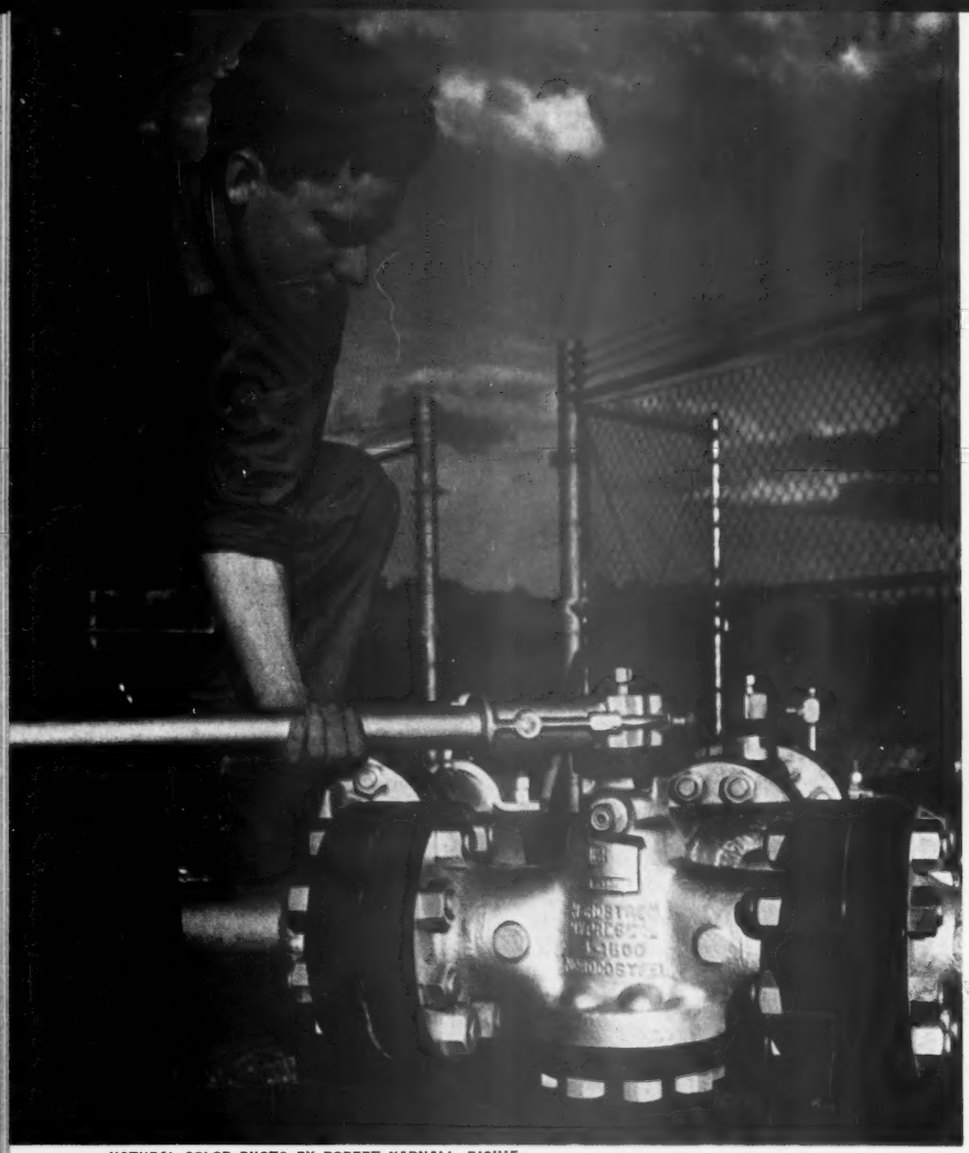
Emergency shut-offs are bound to occur. Nordstrom Valves are always easy to turn, either constantly or as infrequently as once a year. A single valve will hold the line pressure as tightly as though the line was blanked off. A quarter-turn means instant operation. Equipped with remote control, a Nordstrom can be operated miles away. *Ask for Bulletin.*

NORDSTROM VALVES

. . . keep upkeep down



NATURAL COLOR PHOTO BY ROBERT YARNALL RICHIE

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—the only valves that meet every major valve need

•

KEEP UPKEEP DOWN

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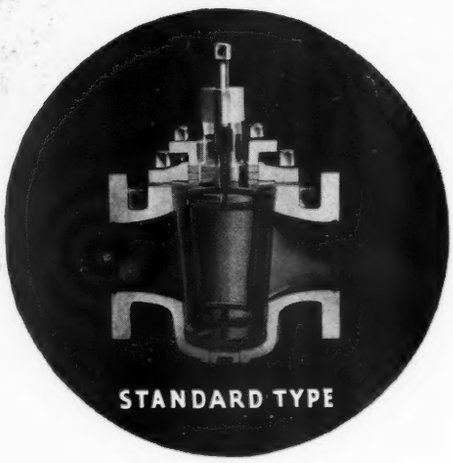
SIZES: ½" to 30"
PRESSURES: vacuum to 15,000 lbs. test
TEMPERATURES: −150° to +1000° F.

Ask for Bulletin



Here's a turn for the best

Pictured above is one of the most invulnerable valves ever built. Nothing can make the line tighter. It makes an absolutely blocked-off line regardless of pressure. This is the Nordstrom Hypreseal Valve built for working pressures up to 7500 lbs. Perhaps in the service of your lines such a valve far exceeds your requirements—but all other Nordstrom Valves for lower pressures are equally leak-proof at their respective pressure ratings. Inasmuch as Nordstrom builds valves that far exceed your requirements you have the assurance that your choice of Nordstroms in ANY type, size or pressure rating will meet your needs.

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LUBRICATED VALVES

Sealdport Lubrication

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guarding these properties are being carried out and can observe and correct any unsatisfactory conditions. It is his duty to see that the instructions regarding admission to and protection of these properties are effectively carried out.

"At the plants and holder stations additional cyclone fencing has been installed where considered advisable. At many points more lights have been connected and in some cases floodlight installations were made.

"Windows and doors of buildings adjacent to the street have been protected with heavy wire screens wherever there seemed to be a possibility of damaging vital equipment from the street.

"Increased stocks of important materials have been accumulated.

"At Greenpoint Works an auxiliary connection is being made between the producer gas plant and the water gas plant. This is primarily intended to provide for an increased make and greater flexibility of operation. From the defense angle the increased flexibility might prove of great importance in providing a source of gas supply which could replace water gas to a considerable extent for mixing with refinery gas."

Consideration is also being given to methods of getting out supervisory men in case of emergency, methods of obtaining extra labor in an emergency, emergency methods and plans of operation, duplication of equipment, interconnections with other gas companies, methods of personnel and property protection and blackout of the works.

Finally, and of very great importance, is the problem of preparing to cope with distribution main breaks and escaping gas, generally on fire. This work has been under the direction of Mr. C. S. Goldsmith, Assistant Engineer of Distribution.

Recently a demonstration was held in Brooklyn of the various methods of shutting off a broken main with the gas on fire, and then of repairing it. Some of the pictures of this are here shown. This demonstration was discussed with the aid of motion pictures by Mr. Goldsmith before the A.G.A. Technical Section at the recent Convention in Atlantic City.

CLARENCE S. GOLDSMITH
Asst. Engineer of Distribution

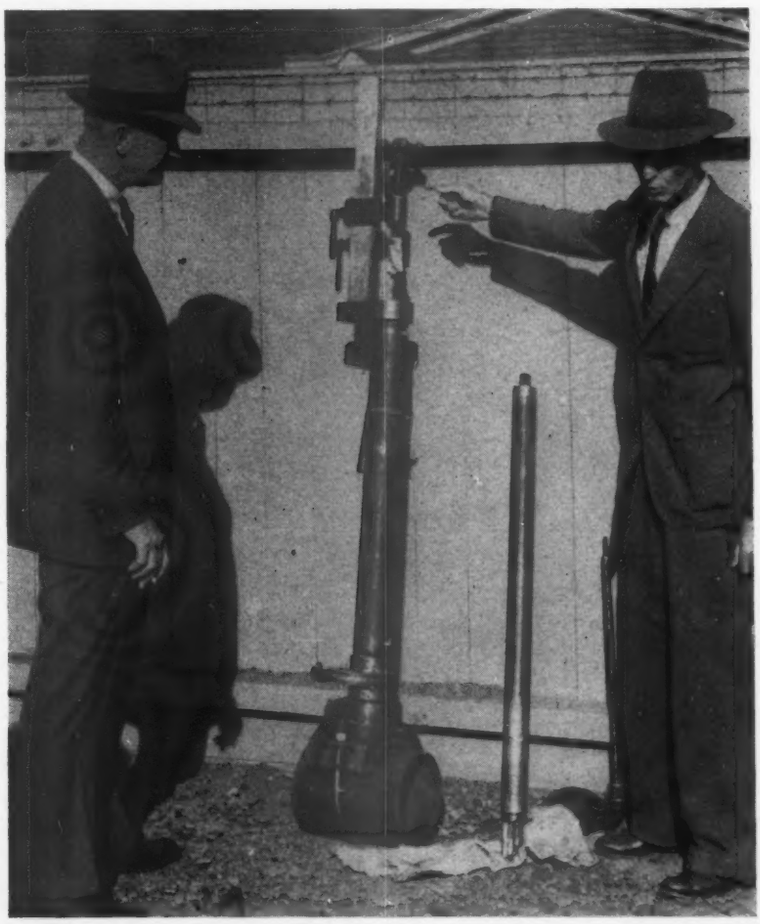
To quote Mr. Goldsmith:

"Gas utilities must be prepared to cope with a large number of breaks, occurring simultaneously, in widely-separated places. They must evolve methods for quickly stopping the flow of gas and making emergency repairs much more speedily than in the past. They must have enough men who are trained to assume responsibility, so that even if a dozen breaks occur all at once there will be adequate forces to cope with them.

"Several methods have been developed to deal with situations in which sections of gas mains have been broken leaving the ends protruding into a large hole or crater. The first means of closing off a gas main that comes to mind is the use of a valve, and where valves have already been installed on mains this unquestionably would be used. However, it is not common practice in the gas industry to install valves on low pressure mains and consequently other means have to be developed which will be equally efficient.

"Pictures have been shown in this country of conical-shaped plugs being used in England. In actual practice such a means of stopping the flow of gas from the end of a broken main is not only quick but efficient. The pictures show the conical-shaped plug being used at the end of a long pole. Experience has proved that this is not the most efficient method of handling the plug since it is not always possible to get near enough to the broken end of a main to utilize this method effectively.

"If a steel cable of sufficient length is stretched across the bomb crater by men on either side, the plug may



Lewis S. Troell shows Vice President Hugh H. Cuthrell the device which Mr. Troell and William P. Wallace have developed for drilling, tapping, and screwing a standpipe into a main. Device may prove useful in Brooklyn Union's defense program. Its use promises to reduce time required for connecting standpipe to main. Through standpipe rubber bag can be inserted and inflated, stopping flow of gas through main.

Top: Supervisory men watch repair crew demonstrate use of new modified Dresser couplings and sleeves for making emergency repairs on a broken main. These devices eliminate need for sawing off jagged ends of main. Lower: The repair job in progress, with a closeup view of the modified Dresser couplings and sleeves. In demonstration repairs were completed in 15 minutes.

be suspended in a cradle in the center of the cable, lowered to the depth of the end of the main and then advanced to a point where the conical end actually enters the pipe. The cup shape of the blunt end of the cone enables a third man to insert the end of a long pole into the cup and to push the plug home inside the main. With this setup the man who is delegated to push the plug in does not necessarily have to be directly opposite the end of the main. This is a tremendous advantage because if the gas from one end of a broken main is burning, it goes without saying that gas from the other end of the broken main will also be burning. Consequently the man who uses the pole to push the plug in will have to stand to one side of the burning gas. In any case it is well to have the man using the pole provided with an asbestos suit so that a shift of wind will not blow the gas flame against him with the possibility of bodily injury.

"Another quick method of closing off a gas main is the old familiar one of using a bag inflated with air. But here again, if bags are going to be used, standpipes must have been installed previously to enable the operators to insert the bag into the main quickly. In certain low-pressure mains of large diameter it is well to provide such standpipes at intervals so that in case of a bad break the main could be closed off quickly.

"Up to and including 12-inch low pressure mains, a heavy grease may be poured into the main by means of a service pipe in sufficient quantity to plug the pipe and effectually shut off the gas. This method has the disadvantage of leaving the pipe with a large amount of grease inside and with no means of removing the grease other than that of digging up the main. Eventually a material will be found which can be readily dissolved and washed to a drip pot.

"After the gas has been shut off the problem then arises of quickly repairing the broken main. Considerable thought has been put into this problem and by working with the engineers of the Dresser Manufacturing Company, a method of repair has been worked out which is the last word in simplicity."

A discussion of the development of air-defense fittings for repairing broken cast-iron mains by Dresser Manufacturing Company follows.

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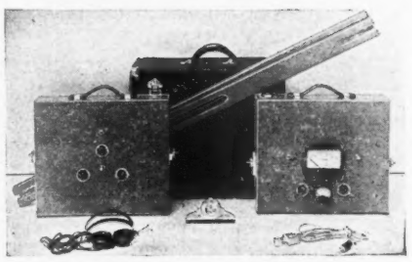

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The Development of Air-Defense Fittings For Repairing Broken Cast-Iron Gas Mains

By
Dresser Manufacturing Company

THE unusual severity of the damage resulting from bombs falling on or near cast-iron gas mains, and the special urgency of quick restoration of service makes this repair problem much more difficult than that of ordinary repairs during normal times. The frequency and extent of damage during an air raid will generally be such as to render customary peace-time repair methods wholly impracticable.

The irregular fractures of the shattered pipe ends to be rejoined present a major obstacle to the use of ordinary couplings or sleeves, which will probably not be sufficiently long to reach the sound pipe beyond the fracture. If it were necessary to cut off the shattered ends and square up the pipe to receive a regular coupling or sleeve, much undesirable extra equipment, work and delay would be involved.

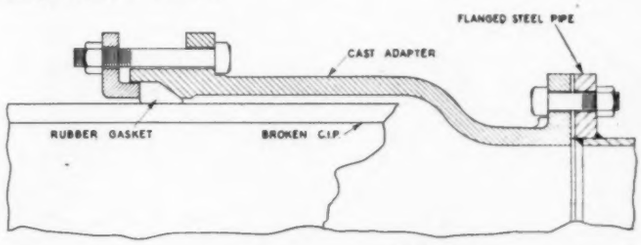
Another problem of major importance in the design of air-defense fittings is the variability in the diameter of cast-iron pipe in each nominal size. Under ordinary circumstances it may be feasible to carry several sizes of repair sleeves or fittings for a given size of pipe, but for the purposes of air defense, a reduction of the stock to an absolute minimum number of items is essential in order to simplify transportation and handling, as well as to avoid the possibility of misfits on the job.

Naturally, the ideal fittings must be simple and quick to install, require a minimum of equipment, should be light and easy to handle, must be safe and positive in performance, and reasonable in cost. Permanence is also a highly desirable characteristic, as it may not be feasible to replace temporary repairs and much time and trouble can be saved with a quick, permanent repair in the first instance.

Since the English were confronted with the problem of bombed main repairs long before it was considered of importance to us, we find that they have devised practicable methods which will serve as a foundation for our own developments. The English practice involves two rather distinct types of fittings, with several variations to meet special circumstances:

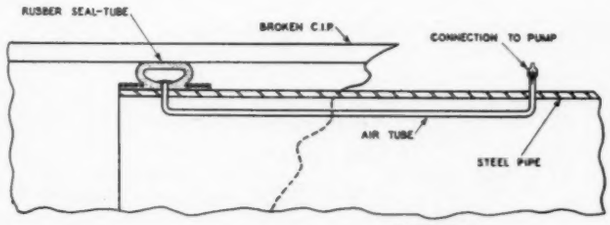
I. Mechanical Joint Fitting

I. The Mechanical Joint fitting consists essentially of a long sleeve mechanical joint to fit over the cast-iron main and having a flange at the opposite end to connect to light-weight flanged steel pipe. These joints are sometimes supplied with flanged or screwed outlets for the connection of a small fire-hose, by means of which service is partially restored during the time required to clear the debris from the bomb crater through which the replacement pipe is to be laid. Other connections are sometimes provided for vacuuming the main to clean out dust and debris which may have been blown into the main beyond reach of mechanical cleaning tools. These fittings have apparently been designed with a view to using replacement pipe of the same nominal size as that repaired. This has the objection that the fitting itself must be quite long, to insure sliding back far enough along the broken main for any contingency. However long the fitting, there will probably be instances where the length is inadequate, necessitating cutting the pipe. Another objection, which is applicable to any of the usual mechanical joint constructions, is the lack of adjustability to more than slight variations in the size of the cast-iron pipe. This would necessitate a large stock of rather cumbersome fittings, and, even more serious, a number of fittings must be carried to the site of any repair in order to insure having the ones which will fit.



AIR-DEFENSE FITTING
ENGLISH METHOD NO. I

OBJECTIONS
1. LONG HEAVY FITTING
2. POSSIBLE TRIMMING OF C.I.P. END REQ'D
3. LACK OF ADJUSTABILITY TO VARIATION IN O.D. OF CAST IRON PIPE



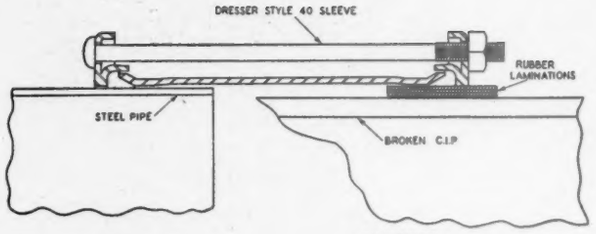
AIR-DEFENSE FITTING
ENGLISH METHOD NO. II

OBJECTIONS:
1. HIGH TUBE PRESSURE REQ'D.
2. FABRIC REINFORCED TUBE DOES NOT SEAL READILY AGAINST ROUGH CAST IRON.
3. MAINTENANCE OF TUBE PRESSURE DOUBTFUL
4. CONSTRICTION OF LINE.
5. HIGH MOULDING COST OF SEAL-TUBE
6. INACCESSIBILITY OF JOINT.

The flanged pipe is objectionable from the standpoint of handling, lack of flexibility in the joints, slowness of assembly and doubtful tightness. Plain-end pipe with flexible mechanical couplings would be simpler, quicker, and more dependable.

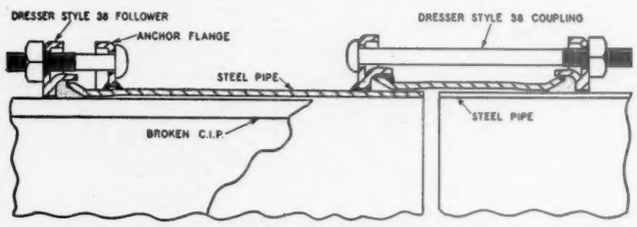
II. Tubular Gasket Fitting

II. The Tubular Gasket fitting consists of a piece of light-weight steel pipe smaller than the inside diameter of the main, and having a tubular gasket affixed at



AIR-DEFENSE FITTING
PRELIMINARY PROPOSAL "A"

OBJECTIONS
1. LEAKAGE THROUGH LAMINATIONS
2. LIMITED LENGTH OF GAP
3. DIFFICULTY IN FITTING LAMINATIONS TO PIPE
4. EXCESSIVE RUBBER EXPOSURE



AIR-DEFENSE FITTING
PRELIMINARY PROPOSAL "B"

OBJECTIONS
1. NO ADJUSTABILITY TO VARIATION IN CAST-IRON PIPE O.D.
2. SPECIAL COUPLING AND PIPE PARTS REQ'D FOR SOME SIZES

one end. The gasket has a tube connection running along the inside of the pipe and terminating in a check valve, which projects through the wall of the pipe at the far end. The end of the pipe opposite to the gasket also is provided with an opening through which a bag can be inserted, the bag being pushed into the main beyond the gasket to shut off the gas while the gasket is inflated with an air-pump. Inflation of the gasket presses it against the pipe and fitting to seal the joint.

While this idea is ingenious and relatively simple in operation, there are a number of objections to it. Experiments with tubular gaskets in this country have shown that fairly high inflation pressures are required to effect a seal against even low gas pressures. Since a considerable area of the gasket is unsupported, rubber alone does not have sufficient strength and it is necessary to use fabric reinforcement, if the danger of rupture is to be averted. This type of gasket does not have the flexibility of rubber and does not readily accommodate itself to rough or irregular surfaces, such as the inside of cast-iron pipe.

These gaskets are difficult to mold and their pressure tightness over a long period of time is doubtful. Leakage of the inflation medium would of course result in gas leakage, so that re-inflation would probably be required from time to time to avert failure of the joint. Movement of the pipe may also cause leakage due to its possible effect on the gasket's internal pressure.

At best, the tubular gasket appears to be feasible only as a temporary seal, unless a construction could be devised to insure a positive, lasting, adjustable seal, such as provided by the compression of rubber gaskets mechanically with bolts or the like.

Another serious objection to the tubular gasket is the large mold expense which would be involved in preparing a complete line of gaskets for the various sizes. Working inside the pipe does not obviate the necessity for a wide range of adjustments, as the inside varies in diameter virtually as much as the outside. It is doubtful whether a tubular gasket could accommodate sufficient variation to avoid a multiplicity of gaskets and fittings.

It seems preferable to work on the outside of the pipe, where the condition of the work may be more readily observed, checked for leakage, etc. This is especially true where the fitting must be assembled in or on the pipe a considerable distance away from the end, in which case any manipulations required would be difficult to perform inside the pipe, due to inaccessibility. In addition the construction of the line may be objectionable in many instances, if the repair is to be considered permanent.

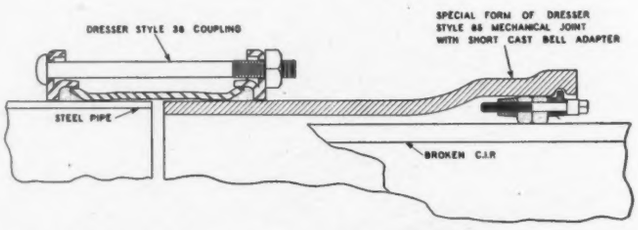
A number of ideas have been proposed as alternates or improvements on the English methods just described. A brief description of some of these will serve to show the wide range of possibilities that have been explored before arrival of what appears to be the most practicable solution:

A. A regular long sleeve to fit the maximum O.D. of the nominal size to be repaired. Steel pipe of maximum O.D. size is used with couplings for intermediate joints. The gasket on the cast-iron pipe is provided with laminations for adjustment to fit smaller sizes. In larger sizes especially, the number of laminations required to reach the lower end of the adjustment range would probably be excessive. Too much rubber would be exposed, with consequent difficulty of maintaining a seal. To insure satisfactory performance, considerable care is required in applying the laminations. The sleeves and couplings would probably have to be specials in most cases, resulting in appreciable tool and die costs to the manufacturer. In any event it is highly desirable to work toward methods utilizing standard assemblies or parts, insofar as possible, not only for low cost, but to increase the availability of the material.

It is also difficult to predict the most satisfactory length of sleeve, and those methods are to be preferred in which there is no limitation to the length of fracture which can be spanned.

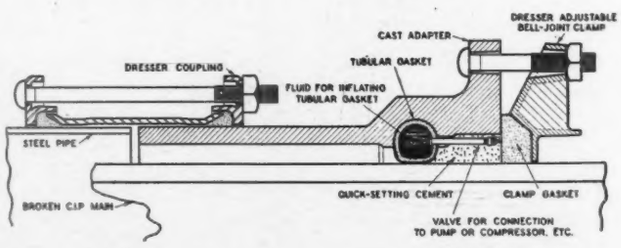
B. This is a method intended to utilize standard coupling parts and steel pipe of a size to slip over the cast-iron main, thus avoiding any limitations of length. However, there is no provision for adjustment and many special sizes of pipe and coupling parts would probably be required, thus defeating the principal object of this scheme.

C. This is a proposal to utilize a special adaptation of the new Dresser Style 85 Mechanical Joint. Two


DRESSER STYLE 38 COUPLING
SPECIAL FORM OF DRESSER STYLE 85 MECHANICAL JOINT WITH SHORT CAST BELL ADAPTER
STEEL PIPE
BROKEN C.I.P

AIR-DEFENSE FITTING
PRELIMINARY PROPOSAL "C"

OBJECTIONS:
1. LARGE UNSUPPORTED RUBBER VOLUME.
2. SPECIAL JOINT PARTS.
3. CUMBERSOME BELL CASTING.
4. SUFFICIENT ADJUSTMENT RANGE DOUBTFUL.



AIR-DEFENSE FITTING
PRELIMINARY PROPOSAL "D"

OBJECTIONS:
1. CUMBERSOME FITTING.
2. DIFFICULTY OF MAKING TUBULAR GASKET
3. CONSIDERABLE FIELD WORK REQ'D.

gaskets or an extra-long gasket are used to provide take-up for pipe variation. The spigot end of the bell adapter is made to a standard steel pipe O.D., such that adapter and steel pipe can slip over the cast-iron pipe.

However, it is doubtful whether sufficient adjustment could be provided merely by extra rubber volume. Also, the joint parts would have to be made specially, as they are now available only for standard A.G.A. outside diameters.

D. This idea is an elaboration of the English scheme utilizing a tubular gasket. In this case the gasket is housed in a bell adapter which will slip over the largest cast-iron main of a given nominal size. The spigot end of the fitting is made to a standard steel pipe O.D. and regular couplings are used for intermediate joints. The bell is provided with a recess which is caulked with quick-setting cement, after the tubular gasket has been inflated to make a temporary seal. This seal would be relied upon only long enough for the cement to set, after which a regular Dresser Style 60 Adjustable Bell-Joint Clamp is applied as a permanent seal. The clamp is bolted to lugs on the outside of the bell, thus dispensing with a bell ring.

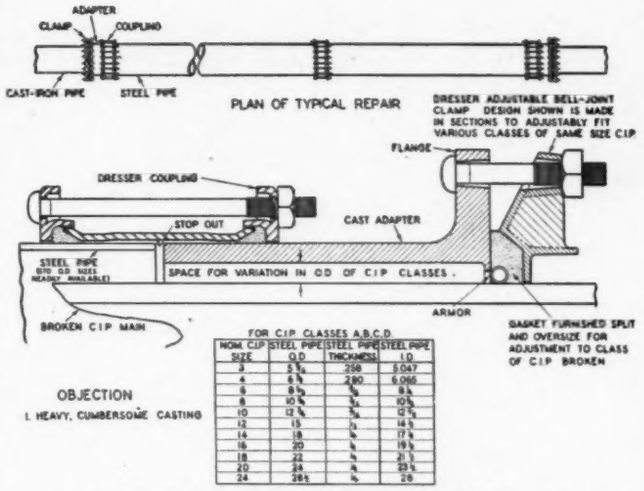
The most distinctive feature of this idea is the utilization of the Dresser adjustable clamp, which solves the problem of a fully adjustable joint seal. As a whole, the principal objections to this method are those pertaining to the tubular gasket, as previously discussed, and the length of time required for completion of the job. The weight and cumbersomeness of the casting are also undesirable.

E. To overcome the objections to the previous proposal, the tubular gasket and caulking are eliminated. To prevent flow of the gasket into the space between bell and pipe the clamp has a special armored gasket. The armor is located at the inside corner of the gasket and is larger than the clearance between the inside of the bell and the smallest pipe of the given nominal size. Therefore, it is unnecessary to do any caulking or other filling of the space between the adapter and the main.

By redesigning and simplifying the adapter of the latter proposal, fittings have been developed which appear to meet all the requirements of adjustability, speed, simplicity, permanence, and low cost.

Air-Defense Fittings

No. 1 is suitable for sizes from 3" to 14" CIP, inclusive. In this design the adapter is made from a regular coupling middle ring, to which a steel plate is welded to act as a bearing surface for the clamp gasket.


ADAPTER
CLAMP
COUPLING
CAST-IRON PIPE
STEEL PIPE
PLAN OF TYPICAL REPAIR
DRESSER ADJUSTABLE BELL-JOINT CLAMP DESIGN SHOWN IS MADE IN SECTIONS TO ADJUSTABLY FIT VARIOUS CLASSES OF SAME SIZE C.I.P.
FLANGE
DRESSER COUPLING
STOP OUT
CAST ADAPTER
STEEL PIPE (STD. O.D. SIZES READILY AVAILABLE)
SPACE FOR VARIATION IN O.D. OF C.I.P. CLASSES
ARMOR
BROKEN C.I.P. MAIN
GASKET FURNISHED SPLIT AND OVERSIZE FOR ADJUSTMENT TO CLASS OF C.I.P. BROKEN
OBJECTION
1. HEAVY, CUMBERSOME CASTING

FOR C.I.P. CLASSES A.B.C.D

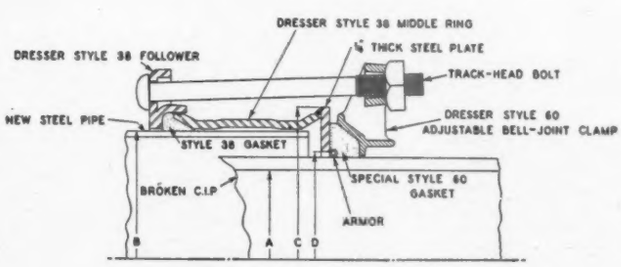
NOM. C.I.P. SIZE	STEEL PIPE O.D.	STEEL PIPE THICKNESS	STEEL PIPE I.D.
3	3.5	.250	3.047
4	4.5	.280	4.065
6	6.5	¼	6.5
8	8.5	¼	8.5
10	10.5	¼	10.5
12	12.5	¼	12.5
13	13	¼	16.5
14	18	¼	17.5
16	20	¼	19.5
18	22	¼	21.5
20	24	¼	23.5
24	28½	¼	28

AIR-DEFENSE FITTING PRELIMINARY PROPOSAL "E"

Steel pipe of standard O.D.'s, as given in the specification table, are used for the replacement sections, intermediate joints being made with regular Dresser couplings. A regular coupling gasket and follower make the seal between steel pipe and adapter. Through bolts from clamp spigot ring to coupling follower compress both gaskets simultaneously. In some sizes it will be necessary to cut special holes in the coupling follower to match the number of holes in the clamp, as these do not coincide in every instance. The holes can be burned out with a torch, or if the followers are ordered as parts, they can be specially punched at the factory.

No. 2, for sizes 16" CIP and larger is similar to No. 1, except that through bolts are not used, the difference in bolt circle diameters between coupling follower and clamp spigot becoming so great that the bolt angularity would be excessive. Therefore, the adapter plate is made large enough to serve as an anchor for the clamp, an anchor flange is welded to the middle ring, and short bolts are used at each end. The anchor flange is easily made by torch-cutting a regular coupling follower. No. 1 Fittings could be made in larger sizes by using larger steel pipe, but it is, of course, desirable to keep the size of replacement pipe to a minimum.

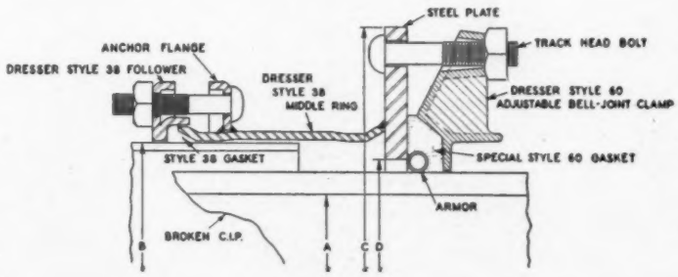
The fittings are readily made from standard parts either by the manufacturer or in the gas company's own shop. The only part not ordinarily carried in stock by most gas companies is the special armored gasket. The latter, of course, should be stocked in sufficient quantities to meet any emergency.



SPECIFICATIONS

C.I.P. SIZE "A" DIA.	STEEL PIPE O.D. "B"	MIDDLE RING	FOLLOWER THICKNESS	STYLE 38 GSKT. SEC.	BOLTS	STL. PLATE DIA. C	STL. PLATE DIA. D
3	3.5	½ x 5	½	½ x 1	4-⅝ x 9	6½	4.085
4	4.5	½ x 5	½	½ x 1	4-⅝ x 9	7½	5.185
6	8.5	½ x 5	½	½ x 1	6-⅝ x 9½	9½	7.285
8	10.5	½ x 5	½	½ x 1	6-⅝ x 9½	12	9.485
10	12.5	½ x 5	½	½ x 1	8-⅝ x 9½	14	11.585
12	16	½ x 7	½	½ x 1½	8-⅝ x 12	17½	13.685
14	18	½ x 7	½	½ x 1½	9-⅝ x 12	19½	15.835

AIR-DEFENSE FITTING NO. 1
FOR C.I.P. SIZES 3" TO 14" INCLUSIVE



SPECIFICATIONS

C.I.P. SIZE "A" DIA.	STEEL PIPE O.D. "B"	MIDDLE RING	FOLLOWER THICKNESS	STYLE 38 GSKT. SEC.	BOLTS	STL. PLATE DIA. C	STL. PLATE DIA. D
16	20	½ x 7	½	½ - 1⅛	12-⅝x4, 9-⅝x4½	25½	17.985
18	22	½ x 7	½	½ - 1⅛	14-⅝x4, 12-⅝x4½	27½	20.025
20	24	½ x 7	½	½ - 1⅛	14-⅝x4, 12-⅝x4½	30½	22.26
24	28	½ x 7	½	½ - 1⅛	16-⅝x4, 12-⅝x4½	34½	26.52

AIR-DEFENSE FITTING NO. 2
FOR SIZES 16" C.I.P. AND LARGER

Oil Shortage Ended

Editor

WITH the suddenness of a blitzkreig, but with far happier results, the "oil shortage" on the Eastern Seaboard came to an official end late on Thursday, October 23rd, and the following day the gasoline rationing order was withdrawn.

It is all a bit confusing. Less than one week before the complete termination of this great emergency, namely on October 18th, Mr. Harold L. Ickes burst into print in *Collier's* on "That Oil Shortage." Statistical mills grind slow, so the last figures for East Coast petroleum stocks available to him were for September 7th. Compared with the previous year, conditions looked bad:

Gasoline: *Down* 2,000,000 barrels
Light heating oils: *Down* 1,000,000 barrels
Heavy fuel oils: *Down* 3,000,000 barrels
Crude oil stocks: *Down* 2,800,000 barrels
Total decline: Nearly 9,000,000 barrels

A great pipe line from Texas to Bayonne, N. J., was stated to be urgently needed to avoid a disastrous oil shortage, and those who said the railroads could haul more oil were just presenting theoretical or guessed at figures of available tank cars.

Presto! On October 23rd the shortage is over. Petroleum stocks along the Atlantic Seaboard are 63,927,000 barrels as compared with 64,403,000 barrels this time last year (a difference of only 476,000 barrels). Only two days before we heard Jean Y. Ray, Vice-Chairman of the A.G.A. Motor Vehicle Committee, telling the Technical Section at Atlantic City about the difficulty some utility companies were having in getting the full quantity of gasoline necessary to run their cars and trucks in the conduct of their essential business.

So now cheers for Mr. Ickes! Get out the old gas buggy and fill 'er up. Senator Maloney's Committee, after taking 382 pages of testimony, while Mr. Ickes was vacationing in the West, was sure as early as September 11th that there was no real oil shortage*, and now Mr. Ickes has reached the same conclusion.

In the backs of our minds there are probably three questions:

(1) Was there ever an oil shortage?
(2) Why the sudden end of all this controversy and the withdrawal of all restrictions?
(3) What of the future?

In our opinion, the question of whether or not there was an oil shortage was one of judgment. The situation might be compared to that of a water gas plant with two sets of unequal capacity and rather limited gas storage. During the winter peak load season it becomes suddenly and unexpectedly necessary to let down the larger set for major repairs. A cold spell is predicted, and it is doubtful whether the smaller set can produce an amount equal to the output. A number of questions then arises: How cold will it be; how long will the cold spell last; will there also be a high wind to increase the demand; how much can the capacity of the set be increased, and in view of all this, is the holder likely to be able to care for the possible deficiency in make until the weather moderates or the larger set can be restored to service? An honest disagreement over the seriousness of the situation is easily possible. You know operators who worry if their storage holder is half empty at the end of the evening peak. You also probably know some who show little concern with a similar gas stock at 7 A.M.

As late as September, we in the East were faced with an oil stock of questionable adequacy, an increasing demand, and an uncertain future. We did not know what would be the trend of tanker sinkings, nor of Britain's need for oil, nor the extent to which we might be able to increase the capacity of our transportation facilities. We did not, nor do we yet know whether the winter will be a cold one.

We feel Mr. Ickes played safe,—perhaps too safe. But the defense program depends in part on an uninterrupted supply of oil to industry, including the gas industry; and the health of those with oil burners depends on properly heated homes. Conservation of petroleum products, in our opinion, was justified, but not threats, crack-down methods and efforts to instill fear,—all associated with an ideology which this country of ours is out to help exterminate. The American people will cooperate when they understand there is real need of cooperation. Remember the last War? You did not attempt to ride around in your automobile on Sunday without a sign showing that you were on some essential business. It was not so much the regulations that stopped you as the fact that you realized they were necessary, you *wanted* to cooperate and the man on the street was there to see that you did. How different has been the recent situation!

Why has the oil shortage vanished? First and foremost, we transferred about 80 tankers to British service and expected to be asked for more. Now, the British find they can return 40 of these, temporarily at least. Second, the railroads have been hauling a lot of oil to the East Coast,—4,396 carloads during the week ending October 18th. Finally, the warm weather of late September and most of October has resulted in less than normal demand for light fuel oil.

The future is unknown, and we can prepare for its eventualities only in the most general way. A cold winter, tanker sinkings or military activity may bring about a recurrence of oil transportation shortage. Refineries are now operating almost at full capacity,* or a deficiency in production may even develop.

The oil shortage appears to be over for the time being at least,—let us hope permanently. Let us hope, however, that if it should recur, it will be handled by enlisting the patriotic cooperation of the American people rather than by methods reminiscent of N.R.A., which we feel might better have been symbolized by a blue-vulture than a blue-eagle.

Meanwhile the gas industry will do well to be constantly on the alert to foresee and meet the various grave shortages of materials which are almost inevitable in critical times like these.

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*See AMERICAN GAS JOURNAL, *October, 1941, page 29, for Report of the Committee.*

*See AMERICAN GAS JOURNAL, *October, 1941, page 17.*

Answers to Priority Questions and Interpretations of Maintenance, Repair and Supplies Order P-46

By
George Bean

American Gas Association,
406 Albee Building, Washington, D. C.

SINCE the publication of my recent article on priorities, the Maintenance, Repair and Supplies Regulation issued by OPM, known as P-46, has been put into operation. Copies of the Regulation with Blank acceptance to be signed by an executive officer of the company were mailed by my office to every Association company member. These acceptances have been executed by a large number of members who are now using the Regulation to good advantage. When companies have filed their acceptance they are permitted to use it immediately without any further notice from OPM.

In a great many cases companies have not understood the full significance of the Regulation and have requested me to obtain interpretations for them. The Priorities Division has been very cooperative in answering these inquiries and it is believed that OPM will soon issue a release covering the subject of interpretations. In the meantime it has been suggested that companies using the P-46 order everything needed for the successful operation of their business and everything to maintain their system from one-half inch nipples to a gas holder. This is permitted under the P-46 Regulation. In place an order with a supplier, if it is found that an A-10 rating will not secure the materials in time for urgent use, application should be made for a special rating, supported by a statement from the supplier as to what rating he would require in order to ship the material in time for the need. In my opinion OPM will consider us an honest Industry, and pending further interpretations of the Regulation we will not be penalized for making honest mistakes. Care should be taken, however, to keep inventories down to the lowest possible working level. Where OPM starts checking inventories, which will have to be reported as soon as the blank forms are made available, if a company is over-stocked on certain items that are not available, to other companies which might be in urgent need of same, this company will probably be required to sell some of this overstocked item to a company in urgent need.

Up to the present time there have been no official interpretations of Order P-46 of detailed importance. The first amendment to the Order restricted delivery of goods obtained under the A-10 rating within the limits of the United States, its territories and possessions.

Another permits the producer at his option to use the end of his fiscal year 1940 in setting up inventory control, instead of the December 31, 1940 date in the original Order.

Appliances are not included in Order P-46, but the necessary pipe, flues and fittings to connect appliances, and to replace similar items that require replacements, are permitted. Well-drilling operations, whether or not the producer is a utility under regulation by a State Commission, are permitted to use Order P-46 to drill wells in existing territories, but exploitation in unproven areas is not permitted.

Up to the present time our efforts to extend P-46 to cover repair parts for appliances have been unsuccessful, but we have hopes that within the near future we will be able to attain this objective.

It is expected that within a few days an official compilation of interpretations of this Order will be published by OPM, and many other questions of minor importance that have arisen under this Order will be clarified.

My advice to all is if there is an uncertainty of any feature of this Regulation, write me and I will obtain the answer. One of the most frequent questions asked me is what is meant by extensions under the P-46 Order. OPM officials tell me that "service area" means the immediate area now being served with gas, and any service connections in this area may be made under P-46. However, OPM has tentatively ruled that a main extension may be considered a "minor capital addition" provided the cost of the material to be used does not exceed $1500. OPM has ruled that once an entension has been made, another extension to that particular one cannot be made under the P-46 Order. Yet extensions on other parts of the distribution system could be made where the material cost does not exceed the $1500. Below are a few questions and answers under P-46:

1. **Q. Does preference rating Order P-45 impose a priority rating automatically on all utilities mentioned therein, or is acceptance by each utility necessary?**

   A. Acceptance is necessary

2. **Q. Is priorities Regulation No. 1 (OPM Release No. PM-1022 of August 28, 1941) Sec. 944.14, which reads in part, "Unless specifically authorized, no person shall, . . . knowingly make delivery of any material whatever, and no person shall accept delivery thereof, which will increase the inventory in excess of the amount necessary to meet required deliveries," a restriction on every person in the United States?**

   A. Yes.

3. **Q. Does priorities Regulation No. 2 (OPM release No. PM-1123, of Sept. 10, 1941) Sec. 944.22 (a) which reads, "All preference ratings, shall be mandatory and legally enforceable, any provision in the instrument assigning the same to the contrary notwithstanding," mean merely that all suppliers must recognize priority ratings, or does it mean also that all producers must accept ratings assigned to them?**

   A. It means that priority system is mandatory on every supplier, and no manufacturer may now refuse to accept an order that carries a defense rating.

4. Q. What is the meaning of the word "class" as used in Sec. (f) of the same Order?

A. "Class" refers to the kind of metal, i.e. whether brass, copper, iron, steel, etc.

5. Q. How does Sec. (f) of the same Order affect a utility's purchases and sales of appliances?

A. Appliances are not covered by the Order, and it is forbidden to use this rating on an order for appliances. Necessary pipe fittings and flues to connect the appliances may be obtained, however.

6. Q. How far must a utility inquire concerning availability of materials before applying its preference rating as provided in Sec. (e) (1) of the Same Order?

A. Past experience is a good standard, but the producer must be careful that he uses this rating only to obtain materials that are under priority control.

7. Q. Could pipe used by a utility to connect a new customer be classed as "operating supplies" under Preference Rating Order P-46, Sec. (a) (5), although not charged to operating expense accounts, in view of Sec. (a) (6)?

A. Yes, the OPM is not concerned with whether pipe for service connections is charged to operating expense accounts. It has been specifically held that necessary materials for service connections to existing mains, may be obtained under this Order.

The importance of emphasizing defense necessity in the preparation of Forms PD-1, as well as in applications for Project Ratings, cannot be too strongly presented. There was one instance where two separate companies on the same day presented through my office Forms PD-1 on the same manufacturer for almost identical quantities of cast iron pipe. One company attached a beautiful "build-up" of its defense customers, the others company attached nothing. The company with the good "build-up" got an A-3 rating, and the company with the poorly prepared PD-1 got an A-10 rating.

Members should understand that in all cases of emergency they should direct their telegrams to OPM, setting forth the nature of the emergency, giving the name of the supplier, the Purchase Order number if possible, and the nature of the material sought for the emergency repair. A copy of the telegram with a covering letter should invariably be sent to my office by air mail, as in every case of this kind we have been able to obtain immediate action on the copy of the telegram several days before the original telegram had reached the proper party at OPM.

Applications for Project Ratings

Obviously when a gas utility is about to expand its plant, with the installation of a generator or a compressor with a large amount of auxiliary equipment which a score or more of manufacturers would be called upon to supply, it would be inconvenient and awkward to execute a Form PD-1 on each of these numerous suppliers, risking the delay that prevails in OPM today.

So when a plant extension program or system extension program or any utility program that can be regarded as a project in itself is planned it is possible to obtain a blanket preference rating for the entire program which is known as a Project Rating.

To obtain this rating the applicant prepares a statement which must be acknowledged on oath of an executive officer of the applicant company. The statement is directed to the Priorities Division, Office of Production Management, Washington, D. C., and should contain the following information in sequence:

1. **Name and address of the owner of the owner of the project.**
2. **Location of the project—name of the station or plants.**
3. **A clear short statement of the scope of the project (whether it is a generating unit, an entire plant, a compressor station, etc.).**
4. **The statement of the functional purpose of the project (whether to create added gas producing facilities, to increase the delivery from existing facilities, to insure continuity of delivery, etc.).**
5. **A statement with brief supporting data as to the relation of the project to National Defense—quantitative statements rather than generalizations.**
6. **A statement of the urgency of need for the construction involved including the statement of the expected maximum demand for the next three three years, the minimum reserve in capacity required, and the present net assured capacity above reserves.**
7. **A statement of the availability of standby equipment.**
8. **A statement as to whether the conconstruction is in addition to an existing plant, whether the plant is already in construction and a statement of new collateral construction necessary to make it effective.**
9. **Whether work has commenced on the project, or when it will commence and the latest practicable date of introduction of the project into commercial operation.**
10. **A statement of aggregate dollars cost of project exclusive of labor. A schedule of the various large elements entering into the project. List the expected sources of procurement, and latest practicable delivery date of each and the dollar cost of each, exclusive of labor. The aggregate dollars involved in these items should approximate 80% of the total dollars involved in the project. It is desirable that smaller elements such as switch-board construction, and various structural steel be listed categorically rather than by details.**

In addition, OPM has recently prepared a new form which must be submitted with all applications for Project Ratings. The form is a schedule of critical defense materials that will be used in the project, and includes poundage and dollar value. These forms are available at my office.

Support this application with all available evidence which may be attached as exhibits. This material may include maps, letters from important defense customers, letters from industries, and if military or naval establishments are on the list of customers, then letters from the Commandants of these establishments might well be included. The application itself should be prepared in quintuplicate and sent to the Washington office of the American Gas Association. Please keep in mind that Project Rating applications must be notarized.

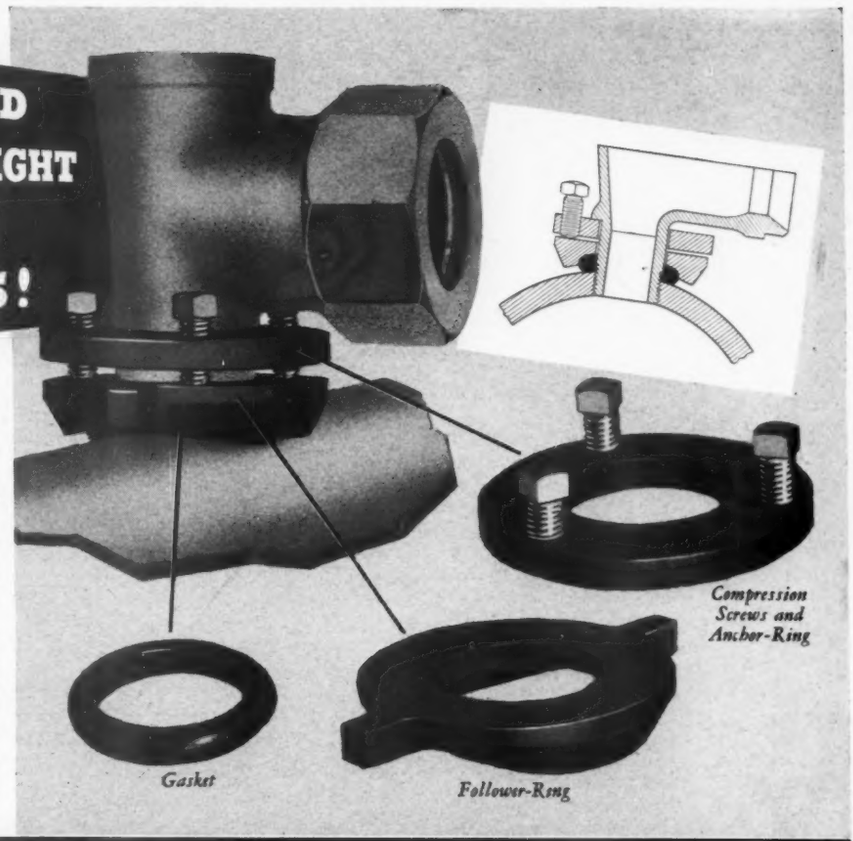
General Preference Order M-36

Another OPM order of interest to the Gas Industry is General Preference Order M-36, which puts Manila Fibre and Manila Cordage under priority control, restricting its sale to all but defense and essential industries. This order as it was originally drawn excluded gas wells, but on the representation of the American Gas Association Section E, Paragraph B, was amended to include gas wells as well as oil wells for drilling cables, bull ropes, cat lines, torpedo lines, and derrick lines.

Gas Production

A number of injuries have come in as to how P-46 affects gas production. Below I give you a few of the questions that have been submitted to me and the answers that I have obtained from OPM. I find that the drilling of wells is being conducted by three methods—the first:

SEAL THREADED FITTINGS GAS-TIGHT with DRESSER SERVICE SEALS!



Designed to provide a gas-tight connection and protect threads against corrosion, the Dresser Service Seal, Style 81, is used to seal threaded service fittings on:

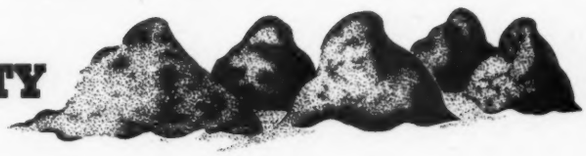
1. steel mains where it is impossible to obtain sufficient threads to make a gas-tight connection; eliminates welding on a screw collar or using a saddle.
2. cast-iron mains to avoid wedging action of tapered threads being screwed tightly.

Because fitting needs to be screwed in the main only hand-tight, it is possible to turn fitting to "look" in any desired direction. The Dresser Service Seal is also useful in sealing off fitting used with an old tap which may be over-size.

When ordering Dresser Service Seals give tap sizes and diameter of main. Further information on request.

DRESSER MANUFACTURING COMPANY, BRADFORD, PA.

UNLIMITED QUANTITY



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Continuing supply of Lavino Activated Oxide is assured by our fully adequate capacity to produce it. Shipments prompt. There is no "bottleneck" of any kind here.

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LAVINO "ACTIVATED" OXIDES

GREATER CAPACITY . . . GREATER ACTIVITY . . . LESS OXIDE REMOVES MORE H_2S!

Lavino Activated Oxide is made in the U. S. and is disinfected against fungi by a special, patented Lavino process.

(A) *Drilling directly and entirely by the gas or pipe line company.*

Questions and answers under this heading are as follows:

1. Q. Do we asume correctly that P-46 may be used for repair and maintenance parts for maintaining the drilling equipment?
   A. Yes.
2. Q. What procedure should be followed to obtain priorities for casing, tubing, and fittings to go in the wells?
   A. Use PD-1, or apply for project rating.
3. Q. What procedure should be followed to obtain priorities on new drilling equipment such as derricks, rigs, drilling engines, cable, etc.?
   A. If the equipment is replacement equipment, and is obtainable under this rating, P-46 may be used. If it is capital addition, and the price for material exceeds $1500, a rating must be obtained under PD-1.

(B) *Drilling by an outside party who has contracted to drill wells for the gas company or pipe line company where the completed wells are to be owned by the gas company.*

1. Q. What procedure should be followed in order to obtain priorities on repair and maintenance parts for the contractor's equipment?
   A. P-46 may be used.
2. Q. The casting, tubing, etc., will be furnished to the drilling contractor by the gas or pipe line company so that it is assumed that the priority procedure would be the same as for Item 2 under (A) preceding.
   A. The same procedure would be followed as in Item 2 under (A).
3. Q. What procedure should be followed by the contractor to obtain priorities on new drilling equipment to be used for contracts for the gas or pipe line company?
   A. Form Pd-1 would be used and application could be made either in the name of the contractor or of the company.

(C) *Drilling by independent producers who drill and own the wells themselves but who contract the gas output of these wells to gas or pipe line company. These independent producers are not utilities but in the majority of cases are individuals. A considerable portion of our gas is obtained by this method and it is important that the drilling program of these individual producers be facilitated every way possible.*

1. Q. What procedure should be followed to obtain priorities for repair and maintenance parts for maintaining the equipment of these producer's wells.
   A. Order P-46 is already construed to apply to producers, although they are not a utilty. This interpretation is based on the fact that the gas is "produced directly or indirectly for public use." The producer can apply the rating.
2. Q. What procedure should be followed to obtain priorities for casing, tubing, fittings, etc., which will go into the independent producer's wells?
   A. If it is a producer's obligation to provide this material, he should make application as in 2 under (A), and if it is the company's obligation, then the company should obtain the rating.
3. Q. What procedure should be followed to obtain priorities for new drilling equipment to be used by the independent producer?
   A. The same answer applies to this question as in the preceding question with proper reference to 3 under (A).

OPM Order P-22 which gives a blanket rating to oil producers has also been held to include gas producers. Yet P-46 is a producer Order and gives much more leeway.

In closing, may I say that the officials in the Priorities Division of OPM have been very cooperative in hundreds of cases handled by my office, and I repeat that if there is any doubt in the minds of any gas executives regarding interpretations or as to what kind of an application should be filed to best meet their needs, my office can probably furnish the answer. The address, as you probably know, is 406 Albee Building, Washington, D. C., and the telephone number is District 7697.

Published through courtesy American Gas Association.

Clark Bros Co. Representatives Attend A.P.I. Convention

D. K. Hutchcraft and George Probst, of Clark Bros. Co. Tulsa office, and Fred H. Hayes, of the Houston office, attended the A.P.I. Convention at San Francisco, Nov. 3-7. Mr. Hutchcraft returned only a few days ago from a ten-day sojourn in the East, during which he attended the American Gas Association Convention, at Atlantic City.

REED'S 4 WHEEL
Razor Blade Pipe Cutters

IDEAL FOR ANY TRENCH OR OTHER CLOSE QUARTER JOBS

$5.11 F. O. B. ERIE

Capacity
½" to 2"
Weight 5 lbs.

The REED FOUR WHEEL Cutter operates with a short back and forth motion through only one-third of a circle. Each of the four wheels exerts the same pressure on the pipe, and all 4 therefore cut evenly and completely through the pipe at the same time.

Equipped with Reed special alloy RAZOR BLADE Wheels, which cut with remarkable ease, leave little burr, and have a long life of useful service.

A sample cutter for test and trial may be ordered on memorandum invoice, to be paid for if retained or returned for credit if unsatisfactory. Try it once, and you will use no other.

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Promotional Policies in the National Emergency

By

H. Carl Wolf

President,
Atlanta Gas Light Company,
Atlanta, Ga.

THE GAS INDUSTRY IS ALL OUT for National Defense. There is a universal willingness to make any sacrifice and a determination to put forth every effort to insure that the world tyrants are defeated. Immediately before us are many problems. After that will come many more. And beyond defense comes PEACE with a train of problems that will tax American industry and ingenuity to the utmost. Any discussion of promotional policies at this time must, of necessity, be pointed toward this latter day, taking full cognizance of the seriousness of today and tomorrow.

H. Carl Wolf

Selling Appliances and Service

Two subjects stand out in the ordinary discussion of promotional activities. First—selling appliances, and second—selling our service. Were we pessimistic about the outcome of the present world conflict or lacked faith in the future of our country or of our industry, we could stop here with a brief discussion of these two points as an end in themselves. But our real problem lies ahead of that in the days when we are confronted with a competitive situation before which all past competition pales, a set of rules and regulations for the governing of business which today would be unrecognizable, a new economy as yet undeterminable. It is for these postwar days that our promotional policies of the next few years must be planned. In discussing this subject, in these rapidly changing times, I must reserve the privilege of changing my mind even while speaking it.

This is a seller's market and if we had only the present to consider, it would be simple to disband our sales forces, cut out advertising and discontinue all promotional activities.

Presented at the Annual Convention, American Gas Association, General Session, Atlantic City, N. J., October 22nd, 1941.

But let me ask if you think quite as highly of a manufacturer who has perhaps done these things in your territory and seems to display no further interest in your business. Would not our customers think the same of us if we did likewise? Even though our materials are being willingly sacrificed for National Defense and appliances are increasingly more difficult to obtain, yet our customers have a right to expect of us that we look out for them; *we must continue to sell both appliances and service.* To disband our sales organizations without regard for the future and for the individuals in them, to stop advertising and promotional work, would be doing more than any reasonable defense program could expect of us. To be aggressive, helpful to our customers and cooperative is certainly in order.

Preparation for Peace Era

Let us be realistic about the problems of the Peace era ahead of us. No one, I am sure, would hazard a guess as to what local administrative and civic regulations, restrictions and regimentation may be met with, nor attempt to lay down a program now to meet them. But we can recognize and prepare to meet some of the factors making for competition. Immense electric power facilities are being built during the present National Emergency. Oil producing, refining and transportation facilities are being expanded, and will doubtless be able to produce a surplus. Coal production is being stepped up, and the industry is thinking in terms of research, promotion and selling efforts. Science may turn again to consideration of the sun's rays as a source of heat. Veritably, the market of the gas industry for heat is to be challenged on all sides.

An adequate promotional policy at this time must be shaped with one outstanding objective—that our companies and our industry emerge strong from this war period, capable of aggressively meeting the competitive problems of the Peace period. Promotion must start from within and be more searching than ever we have allowed ourselves to think of before. We have a real selling job tomorrow and every sinew must be strong enough to support the all-out effort for that job. We must be strong financially; strong in personnel and organization; strong physically; strong in favor of the public, and most important of all, strong in our determination to adequately serve the public. Our industry of tomorrow may well seem unrelated to the one we know today; but it is important that by strength, adaptability, initiative, resourcefulness and organization we be prepared properly and efficiently to perform our obligations and meet our challenge. Fortunately a moratorium on the mad rush for business and sales presents to us an opportunity to review more leisurely and sanely what we have been doing and to plan more calmly for the future.

Promotional Policies

Above all else, in shaping our policies we must see to it that our financial position is strong. Earnings must be sufficient to meet increasing costs and heavier tax burdens. Our capital structure should be flexible enough to provide funds for expansion in the future. Our properties must be maintained in sound physical condition to meet increasing demands. All this is outside the scope of this paper, perhaps, but it emphasizes the necessity for continued selling and for careful planning.

As a first important step in our promotional policies, let us review our rate situation. Over the years the industry can point to a good record of downward revision. It has been active in devising rates to fit new conditions as they arose, and has been ever ready to try out new forms of rates. This policy should be continued. This is no time to think of reducing rates, for the rising tide of costs may force us to higher ones before long. And there are always difficulties for our industry in the way of raising rates. However, a horizontal movement to fix rates to meet new conditions and to minimize inequities which may have crept in may be justified. Our new

rate program must be flexible enough to meet conditions as they arise and to put us in position to adequately combat the coming competition. Now is the time to begin planning.

Physical Properties

Next let us look at the conditions of our physical properties. Great progress has been made in modernizing our offices, in brightening up of our equipment and in stream-lining our practices. This policy in moving the gas industry from "Gas Alley" to "Main Street" must not be allowed to falter. If we would have others believe in us and in our service, we must evidence our belief in ourselves by the kind of appearance we make.

Public Relations

If we are to emerge strong from this emergency we must have strong organizations. Personnel problems are more important today than ever before, and will become even more so. A new relationship between capital and labor is in the making. We cannot overlook the importance of personnel and organization in the battle of tomorrow. Ours is one of the large industries in the country. On us rests a great responsibility—a responsibility to our public, to our employees, to our management, to our owners—yes—to our system of free enterprise. A responsibility to strive ever for advancing the interest of all elements of society—to build an organization and an industry basically sound for the true rendering of service. We have an investment in our personnel. The rapid turnover in personnel, which is adding so much to the distortion of industry, should, so far as our industry is concerned, be minimized.

Appliance Sales and Service

The scarcity of new appliances would indicate that this is an excellent time for us to emphasize the long-life and other good qualities of existing gas appliances which make for the stability of our business. As installation and service work slack off, we might well undertake the inspection of all of our customers' appliances to make certain that they are in good repair. During this inspection a careful catalog of all appliances on the customer's premises can be made so that when the time comes again for selling, we shall know where our prospects lie. This will give us an opportunity to learn more about the habits, desires and preferences of our customers, to answer questions about our service or equipment, to build confidence in our company. Many businesses will be taking a superior attitude while this seller's market is on; in contrast, have we not a wonderful opportunity to promote our service in the future by exhibiting a real interest in the customer's welfare now?

Advertising

What to do about advertising in these days is troubling all of us. I believe firmly that this is the time to strengthen our national advertising and that we should study carefully our local advertising in each community. Our industry's national advertising program is making friends for us everywhere. It needs further encouragement. Local advertising is a problem peculiar to each locality. We are seeing a rapid shift from appliance copy to institutional copy, slanted toward our industry's important contribution to National Defense. We have an established relationship to maintain with our local advertising media. It is my hope that we shall be able to continue our local advertising.

Research

No discussion of promotional policies would be complete without a word of approbation for the movement within our industry for research. Meeting the challenge of the past, our engineering and research efforts have brought us from an industry of "lighting" to an industry of "heating." A new challenge on this latter front is now before us and we must find out whether we can and should adequately meet that challenge or again orient our industry in a new direction. If we are to continue as a heat-serving industry, we have a responsibility to make certain that we are utilizing economically the energy resources of the country. Can the already high efficiency of gas manufacturing processes be increased and give manufactured gas a more important place in our picture? Can transmission and distribution efficiencies and facilities be improved so as to shorten the dollar distance from the point of origin to the point of use? Can our utilization factors be improved and new methods of utilization be devised? Our industry, at this time, is severely circumscribed by the cost of extending its facilities. Research might well find the answer to our questions and thus broaden the horizon of our industry.

Promotional policies, as never before, must touch on every individual company policy of every nature. We will continue to be ALL OUT for National Defense, but must build strongly for the years ahead. What I have been trying to say is that selling goes far beyond the mere matter of transferring a piece of goods from our floor to the customer's kitchen. Selling must start, continue and end with service. To the extent that we re-dedicate ourselves to service—believe it, live it and practise it—to that extent will our industry merit and receive a just share of the customer's dollar in the future.

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REYNOLDS *Regulators Produce Accurate Pressures*

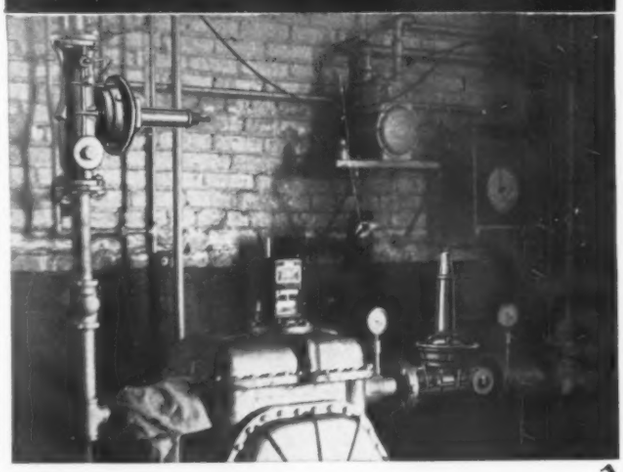

Photo of actual installation in Liquid Carbonic Plant

REYNOLDS REGULATORS will operate accurately either individually or in series, depending upon the conditions under which they operate. The above photograph shows an actual double reduction installation in a liquid carbonic plant.

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Eastern Appliance Company Boston, Massachusetts 2nd Unit: Santa Fe Building Dallas, Texas	☆	423 Dwight Building Kansas City, Missouri Wm. A. Ehlers No. 268 Park Street Upper Montclair, N. J.

GAS CONTROL SINCE 1892

REYNOLDS GAS REGULATOR CO.

ANDERSON, INDIANA, U. S. A.

Proposed Interruptible Auxiliary or Alternative Service Rate of The Brooklyn Union Gas Company

The Editor

FACED with a possible shortage of fuel oil for heating purposes, a number of large users in the East have made application for stand-by gas service.

The potential demand of such service would be large; the total volume consumption would be uncertain, though unlikely to be commensurate with the peak demand, and its permanency would be doubtful. Such business would in many cases be unprofitable under existing rate schedules, particularly if an investment of substantial size must be made to serve it. Even more serious is the danger that this temporary load might use up reserve plant and distribution capacity and even threaten the continuity of the service to regular customers at times of peak demand.

The problems arising from this situation were considered and reported on by a Sub-Committee of the American Association Rate Committee. (See AMERICAN GAS JOURNAL, September 1941, page 15.)

The Brooklyn Union Gas Company received requests for temporary or stand-by service from eleven large fuel oil users up to September 24, 1941. Their total estimated twenty-four hour demand was 9,000,000 cubic feet. It was considered likely that many more similar requests would be received, and that the resulting demands of such customers, especially on very cold days, together with the demands of regular customers, might well exceed the capacity of existing production facilities.

To protect the quality of service to regular customers and avoid the necessity of making large uneconomic capital expenditures, the company filed amendments and additions to its rate schedules as of September 24, 1941. These have been suspended by the New York Public Service Commission pending their consideration.

The proposed changes essentially are as follows:

(1) Addition of Service Classification No. 8 for Interruptible Auxiliary or Alternative Service (Large Volume). The proposed rates under this classification are identical with those of existing Classification No. 3 for General Service (Large Volume), with the addition of an oil adjustment clause for all consumption in excess of 1,000,00 cubic feet per month. However, service under the new classification might be interrupted at the option of the Company on twelve hours notice.

(2) Limitation of type of service under Classification No. 3 for General Service (Large Volume). Auxiliary or alternative use of gas in excess of 5,000 cubic feet per hour would be supplied only on an interruptible basis.

(3) Addition of Oil Adjustment Clause to Service Classification No. 3, General Service (Large Volume), the provision being the same as for Classification No. 8.

The company has thus sought to

(1) Reserve production capacity for regular customers and insure them a continuous and uninterrupted supply of gas, and

(2) Insure prompt adjustment of its rate for large volume use should the price of enriching oil increase.

The threat of fuel oil shortage during the coming winter has recently been much reduced; but none can say whether the relief is permanent, nor what other conditions or shortages may cause temporary heavy demands for gas service in the future. In many places the demands of industry for gas service have grown beyond any figure that could reasonably have been foreseen. Additional manufacturing or distribution capacity is now difficult and slow to secure even with a high priority rating. Therefore the action of the New York Public Service Commission either in approving the proposed rates for Brooklyn or in otherwise attempting to help solve this important problem will be awaited with interest.

Existing Rate for General Service (Large Volume)
(Service Classification No. 3)

Availability—For any use of gas by any consumer of gas service agreeing in advance to use and/or pay for not less than 100,000 cu. ft. of gas in each month of the year.

Rate—

First	100,000 cu. ft. or less	$100.00
Next	100,000 cu. ft.	6.5c per C
Next	100,000 cu. ft.	6.0c per C
Next	200,000 cu. ft.	5.5c per C
Next	500,000 cu. ft.	4.5c per C
All additional		3.5c per C

Minimum Monthly Charge—$100.00.
Term of Contract—One year.

Effective—Feb. 9, 1936.

(It is now proposed to add to this rate an oil adjustment clause identical to that proposed for Service Classification No. 8.)

Proposed Limitation of Availabiilty of Service Classifications:

Auxiliary or alternative use of gas in excess of 5,000 cubic feet per hour will not be supplied except as provided in Service Classification No. 8. Auxiliary or alternative service as used in this Rate Schedule shall include:

(a) Supply of gas when the customer retains facilities for using some other source of heat which can be substituted for gas supplied.

(b) The first twelve months' supply of gas for the purposes which are or were normally supplied from another source of heat.

York Advertising and Sales Promotion Forces Consolidated

The advertising department of the York Ice Machinery Corporation has left its former quarters in New York City and is now combined with the sales promotion department of the company at factory headquarters in York, Pennsylvania.

Anker Winther, assistant general sales manager of the corporation will supervise the activities of the new advertising and sales promotion department.

Frank Chalmers, who formerly handled advertising exclusively, has been transferred to York and will function in the new department not only as a specialist in advertising but will participate in sales promotion functions as well.

THE BROOKLYN UNION GAS COMPANY

P. S. C. No. 3—GAS
Original Leaf No. 21

SERVICE CLASSIFICATION No. 8

INTERRUPTIBLE AUXILIARY OR ALTERNATIVE SERVICE
(Large Volume)

Applicable to Use of Service for:

Available for auxiliary or alternative use of gas by any consumer of gas service whose maximum hourly demand exceeds 5,000 cubic feet, agreeing in advance to use and/or pay for not less than 100,000 cubic feet of gas each month of the year. Service is deemed auxiliary or alternative when the customer retains facilities for using some other source of heat which can be substituted for gas supplied under this Classification or when the first twelve months' supply of gas is for purposes which are or were normally supplied from another existing source of heat.

Character of Service:

Manufactured gas; B.T.U. content per rule of Commission (537 B.T.U. per cubic foot); pressure 4.5 inches (approximately), or higher pressures up to one pound except when to do so might cause an impairment or diminution in the supply of service to customers taking service under other service classifications. See General Information, Leaf 6, Paragraph 4.

Interruptible at the option of the Company after not less than twelve hours' notice to the consumer.

Rate:

First	100,000 cu. ft. or less per month	One Hundred Dollars ($100.00)		
Next	100,000 cu. ft. metered per month	Six and one-half Cents	($.065)	per C cu. ft.
Next	100,000 " " " " "	Six Cents	($.06)	" " " "
Next	200,000 " " " " "	Five and one-half Cents	($.055)	" " " "
Next	500,000 " " " " "	Four and one-half Cents	($.045)	" " " "
All over	1,000,000 " " " " "	Three and one-half Cents	($.035)	" " " "

For each $.10 increase in the price of Bunker C oil, F. O. B. New York Harbor, over a base price of $1.40 per barrel, there shall be added $.0009 for each 100 cubic feet of gas consumed in excess of 1,000,000 cubic feet per month. The price upon which this charge shall be based will be the average price paid per barrel of Bunker C oil during the second month preceding the current billing.

Minimum Charge:

One Hundred Dollars ($100.00) per month.

Determination of Demand:

No demand rate charged.

Terms of Payment:

Net cash.

Term:

Service under this Classification shall be for a period of at least one year from the date of application and for yearly periods thereafter. Terminable by the consumer on two days' written notice to the Company, but subject to the consumer's performance of any unfulfilled obligation for the contract year in which such notice of termination is given; terminable by the Company on like notice to the consumer and likewise in the manner provided by law and the rules and regulations contained in the Rate Schedule of the Company on file with the Public Service Commission.

Special Provisions:

When service should be rendered from the Company's high pressure system, either in the interest of proper service or because of the pressure requirements of the customer, the cost of connection between the Company's transmission system and his premises shall be borne by the customer.

Date of Issue, September 24, 1941 **Date Effective, October 24, 1941**

Issued by C. E. Paige, President,
176 Remsen Street,
Borough of Brooklyn, City of New York.

Consumers Cooperate in Curtailed Gas Supply

By
Harry Padgett
Boulder, Colo.

Public Service Co. of Colorado takes consumers into confidence in seeking curtailed use of natural gas while repairs are made on two breaks in line—ten miles apart—Voluntary cut of 75% made immediately by consumers in State.

CUT OFF the gas supply for half a state, a half-million consumers and what will happen? A consumer in Colorado supplied an apt answer, typical of all consumers. He was asked by a casual visitor, "How are you getting along without gas?" His quick reply was, "We're getting along without gas."

Actually, no domestic consumers were cut off entirely from the supply of natural gas or manufactured, and but three small towns were off the line for twenty-four hours, after which curtailed service was resumed. But this was despite two major breaks in the line supplying almost all the eastern half of Colorado and towns as far north as Cheyenne, Wyoming. The breaks in the natural gas line running from Amarillo, Texas, through the northeastern corner of New Mexico into Colorado, operated by the Colorado Interstate Gas Co., were caused by flash floods sweeping down normally dry arroyos and carving out deep channels, taking out the pipe as it deepened the channel.

These breaks, the second was not discovered for some hours after work had been started on the first repair job, were both in locations where it was extremely difficult to move in equipment and pipe. A road had to be constructed, and hours had passed before it was known that service would be seriously curtailed or cut off entirely, meanwhile the consumers had been using the gas in their usual requirements.

Under those circumstances, company officials describe it as unbelievable that the public—customers—would cooperate to such an extent that the gas "pack" remaining in the pipe between the breaks and as far north as Cheyenne could be made to

Left: An emergency telephone line hastily strung by workmen of the Colorado Interstate Gas Co. to the site of break in gas line, provides almost the only means of communications in terrain so rough it required eight hours to reach the break 30 miles from the highway. Member of the crew is preparing to telephone instructions back to highway for supplies and equipment.

Below: Six inch temporary by-pass repair on gas line from Amarillo Texas to Denver where flash flood took out twenty-two inch pipe. This shows the kind of country, also the "dry" Seneca creek and the banks carved out by the flood. Extreme difficulties were experienced in getting crews and equipment to these breaks.

suffice for at least emergency needs. They apparently enjoyed working with the company in seeing that as little hardship as possible would result.

The terse statistics and records of the Public Service Co. of Colo. fail to reveal the dramatic demonstration of solidarity. But briefly they are these: The break was discovered Monday, Sept. 22, natural gas through the by-passed line again reached the cities on the line on Friday morning, Sept. 26th, through a six inch pipe used to by-pass both breaks and together totalling almost 1,000 feet of temporary pipe. On Tuesday, Sept. 23, the company revealed, the first break had been repaired temporarily, but another had been discovered and it could not possibly be repaired before 3 a.m. Wednesday. Denver users were requested to turn off all heating systems using gas and also appliances. All domestic gas was shut off in Pueblo, Colorado Springs, La Junta, and other towns of the Arkansas Valley at 2 p.m. Three small towns near Denver were shut off at 3 p.m. Gas to all cities north of Denver, Greeley, Fort Collins, Cheyenne, Wyo., and others was expected to just last through the dinner hour. Denver's standby plant manufacturing gas was operating at full capacity, despite a green crew, although there were three "old hands" experienced in its operation to help get it going.

The standby plant at Denver, and one at Boulder, were not of sufficient capacity to care for all needs in those towns, but with conservative use, would supply fuel for cooking and for emergency use in hospitals, and homes where heat was essential to someone's health. All other use of the gas was to be suspended.

By September 26th, when the standby plants were shut down, the gas consumption of the entire area had been reduced voluntarily to but 25% of the normal requirements. Of course, industrial users were shut off first, and weather which had cooperated too, by being warmer than usual for the time of year aided in making the record. But officials of the company heaped praise on the public for working as diligently in making the situation bearable as did the company and it's repair crews.

Frank Jamieson, public relations director said, "It is unbelievable that over so large an area, people would voluntarily curb the use of natural gas to such an extent. It is sometimes hard for a company to take the public fully into its confidence, especially when there are difficulties or emergencies which must be explained. But we did, gave them all the information we had, and the response was magnificent."

"What makes this out of the ordinary," said F. T. Parks, general superintendent of gas operations, "is the willing cooperation of the people throughout the state, the repairing of a line, emergency arrangements are in a way routine, we expect troubles at times, but when the public steps in and does everything possible to aid —well, it is deserving of praise!"

Probably the reason, or at least a major reason for that cooperation was in the publicity reaching the public. Just as every baseball fan drops everything if at all possible to listen to "the Series," and is disgusted with those who don't, and as millions grip the sides of their chairs during a Joe Louis bout, this pipe line break and subsequent developments were relayed to the public as rapidly as events occurred.

And, with a "play-by-play" description of the difficulties encountered in reaching the scene of the break, of the workmen toiling in mud and muck, of industry shutting down its plants, hospitals and institutions turning to other fuels for cooking, in order that the gas remaining in the pipes would suffice for cooking and emergency needs, the consumers knew they were a part in a "ball game" or battle equally with the men at work down there. Realizing the

KLZ Public Service Bulletin

DENVER, COLO., SEPTEMBER 23, 1941

ATTENTION, PLEASE!

PUBLIC SERVICE OFFICIALS today asked residents to turn off, in so far as possible, their gas appliances to conserve NATURAL GAS during the present emergency.

Many gas furnaces and heaters along with other equipment have been turned off completely in Denver. There is a good possibility that the emergency plant of the Public Service Co. will be able to carry a load large enough to keep Denver supplied until the break in the pipe line in New Mexico is repaired. The more co-operation given, the greater the possibility will be that gas for cooking can be maintained. Natural gas was cut off in Littleton, Arvada, Englewood, and outlying districts around noon today. Denver is expected to be using manufactured gas after 2 p. m. AND THERE IS NO CAUSE FOR ALARM IN THE PRESENT SITUATION.

WHAT TO DO!

Keep your gas appliances off until notified that the emergency has passed.

To relight gas appliances when gas is available:

1. **Make sure all gas valves on gas appliances are closed and that they have been closed for at least 15 minutes before relighting any appliances.**
2. **Light top burners on gas range first and let burn for 10 minutes. During this period watch the flame and if it goes out, relight it. After this procedure has been followed, light pilots on your automatic appliances. Watch the flame burn for 10 minutes. If pilot flame goes out, relight it and let burn for 10 minutes steadily before lighting main burners.**
3. **Turn on main valves of appliances. Follow all instructions carefully, both these and those which are shown on your appliances or on instruction books.**

And if you are in doubt about turning your gas back on, call the Public Service Company, TAbor 1122, and a man will be sent to your place.

Keep tuned to KLZ for all developments during present emergency.

Thousands of these cautionary leaflets, printed in red, were distributed.

need for conserving, the action followed.

Naturally, the broadside of publicity awakened public interest and the gravity of the situation was brought home. They were informed that by conserving the fuel remaining in the pipe, it might prove enough to last until repairs could be made and the supply renewed. Failing, the emergency uses would be protected by the company and all other consumers would be shut off completely.

Three of the larger radio stations set up broadcasting studios in the company's offices in Denver, and events were given to them for broadcasting as fast as possible . . . it required eight hours for travelers to negotiate the thirty miles of scarred and muddy terrain between the highway and the break, and communications were slow. The company established a press room for the newspaper services where information was available to them. A temporary telephone line was strung up between Clayton, New Mexico and the break, but information over this was obtained only through observations made by the workmen in calling in for supplies or equipment for the job, as it was felt the primary need was to speed work and not interrupt it by asking for news. The company sent a representative to the scene, but the going was so difficult, he returned and was flown down in an airplane. He made motion pictures of the scenes from the air, landed and made more news pictures, and was flown back to Denver, where the pictures were immediately made available for the press, and needless to say, were welcomed by the papers which had moved the war from front pages in preference to this story affecting all the readers in the territory.

Throughout, the papers and radio announced precautions in handling the gas appliances, where lowering pressure had caused pilot lights to go out, and similar troubles. Precautions were urged in re-lighting these, particularly in Denver where the change-over from natural to manufactured gas made a difference in pressure and in the lighting qualities. One radio station had a printer rush through thousands of small leaflets with the safety rules for lighting and caring for the appliances, within twelve hours these were available from stores throughout the region, printed in red ink to emphasize the need for caution. These things resulted in a very low casualty list, although four people received burns because they did not follow the directions and allowed gas to accumulate before trying to light it.

But through the conservation efforts, all towns which had been turned off, and there were only three off for 24 hours, were returned to the line, and fuel sufficient for all needs such as cooking, hospitals and so on was available. Only a very few industrial users objected to the domestic use in preference to their operations — objections which were not considered. In most cases, there were no serious difficulties, or hardships, a brickyard, with a "run of brick" in the kiln which would be ruined if the heat failed, was permitted to complete the operation, a nationally known canning plant was in danger of having a huge quantity of tomatoes spoil if they could not be processed immediately, and was allowed fuel for this purpose. Bakers finished the baking of doughs which would not keep over a period, and in other ways every possible consideration was shown consumers of all classes. And the Public Service Company of Colorado has made many, many more friends for its officials and crews, and those people have a sincere respect for the general public, the public that likes a "blow-by-blow" participation when there is a fight in prospect.

FOR want of a nail the shoe was lost; for want of a shoe the horse was lost; and for want of a horse the rider was lost; being overtaken and slain by the enemy. What Franklin said 200 years ago applies today thruout the land. It means doing one's job well, whatever it may be. Purification, a small but vital link in gas production, is just one of those "horseshoe nails" that mean so much. Here economy *plus reliability* count—and that is why the gas industry in the past year repeat-ordered over 1,500,000 bushels of GPM Iron Hydroxide.

Gas Purifying Materials Co.
Long Island City, New York

GPM IRON HYDROXIDE

Alternative and Auxiliary Gases from Liquefied Petroleum Products

PART I

By

C. George Segeler,

Engineer of Utilization
American Gas Association, New York, N. Y.

THE PROBLEM, in a nutshell, is to find an alternative source of gas at a cost that gas companies are willing to pay, but cracking that shell is quite another matter as is attested by the slow development of suitable methods. In so far as liquefied petroleum gases are concerned, about twenty-five gas utility companies are already using them as alternative or supplementary gas supplies although 173 or more communities in the United States are exclusively provided with some form of LP-Gas service. In this discussion, the latter group has naturally been omitted because they are not concerned with alternative gas supplies, having once adjusted all of their operations and appliances for LP-Gases. The small and select company of twenty-five gas utilities is growing from year to year as fast as the technical hurdles of applying LP-Gases can be crossed. The economics of their application appear to be far less difficult to solve and, in most instances, may be decidedly in their favor.

A mere glance at the titles of the technical papers delivered at various gas meetings will show how frequently the question of meeting peak load has been discussed. Yet, it is fair to say that intensive study of this important phase of the gas business has but begun, for there is every evidence that the continued expansion of the use of gas for domestic and commercial heating will continue to increase the severity of the peaks. Diversity between customers, which is so helpful for most gas applications, is almost non-existent for heating, according to the most recent investigations of coincident demands in this field. More and more gas companies eventually will be faced with the problem of providing peak load facilities for gas production at a minimum investment because of the short duration of the severe peaks due to space heating loads.

The major opportunity for solving this problem appears to be by means of readily gasified liquids because they require a minimum of investment for a maximum of capacity. For example, the City of Long Beach, California, has just completed a plant with a peak capacity of not less than 500,000 cu.ft. of equivalent natural gas per hour at a cost of less than $240,000 complete. Whether such liquids are liquefied petroleum products or, as in the case of Cleveland, liquefied natural gas is an economic problem rather than a technical one, but, except where underground storage reservoirs of suitable structure exist, it may safely be said that liquid gas is the avenue which offers the greatest promise for the solution of the vexing peak load problem.

The objectives which have prompted the gas utility companies to make use of LP-Gas products in a surprisingly large number of different ways are not only those deriving from need for peak load gas. They can be classified into seven broad groups, as follows:

1. Many natural gas companies purchase gas on rate schedules involving demand charges based upon the maximum daily requirements in addition to a total volume charge. Companies paying for gas in this manner are interested in means for reducing the maximum demand so as to keep the demand charge at the lowest possible level. With the increase in the use of gas for house heating, the maximum day demand has also increased, and this market for gas will probably continue to expand with resultant increases in the maximum day demand.

2. Some gas companies are located in areas in which the supplies of gas tend to increase and decrease with the production of oil. When large quantities of oil are being produced and marketed, there is a great excess of available gas, and at other times, it may be difficult to secure enough gas to meet the requirements, particularly those of heavy industries.

3. It is self-evident that many miles separate gas companies from their sources of supply, and particularly in times like these, such lines are vulnerable. Thus plans for meeting emergencies caused by an interruption of gas supplies are most important and the substitute gas may have to carry the entire load for short periods.

4. The growth of the heating load has introduced an element of uncertainty in the need for gas supplies due to the possibility of unusually cold weather. There are several reports of severe weather conditions in parts of the country which have never before experienced extreme periods of sustained cold weather in which the gas facilities have been overtaxed.

5. Companies serving mixed manufactured and natural gas feel the need for auxiliary gas supplies which could be put into operation quickly to bridge the gap while starting up the regular manufactured gas facilities during peak times or under emergency conditions.

6. Straight manufactured gas companies are beginning to face the peak load problems as their manufacturing facilities reach the limit of their effective capacity. The LP-Gases offer several possibilities for increasing the peak supplies of gas.

7. State standards compel maintenance of definite Btu. values which would be costly to maintain at the end of long transmission lines. LP-Gases have furnished a successful way of restoring a limited number of Btu. to manufactured gases in order to reestablish their heating value at the proper level.

Although the experimental work of the Bureau of Mines, as far back as 1927, outlined many of the possibilities, the growth of the idea, so it

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must be conceded, has been slow. The reason is not hard to find. The fundamental differences in the characteristics of the auxiliary gases and those of the city gases in general use have acted as stumbling blocks and have produced workable but not entirely satisfactory applications of LP-Gases. This, it may fairly be said, is the crux of the problem.

Interchangeability of LP-Gases

LP-Gases, as used in this paper, designate varying combinations of propane and butanes (and the unsaturated homologues). While each one of these materials has somewhat differing physical properties, they are sufficiently close together that a certain degree of interchange is possible to accommodate climatic changes throughout the season.

Because of the high specific gravity and high heating value of propane and butane, they cannot be mixed to any great extent with existing gas supplies. To increase their interchangeability, a carrier gas must be employed for the purpose of modifying the characteristics of LP-Gases so as to make them more interchangeable with the gas supply which they are to replace or supplement. In spite of the great amount of attention which has been paid in the past to the LP-Gases, there has been relatively little attention paid to the possibilities of the carrier gases. Opportunity exists for profitable research in the field of these carrier gases to see whether there are any among them which would prove superior to those already used for this purpose.

Four important properties of the substitute gas should be considered in evaluating interchangeability:

1. Theoretical air requirements for combustion.
2. Heating value.
3. Specific gravity.
4. Ignition and burning characteristics.

An ideal substitute would be a gas in which these four properties were the same as those of the original gas, but modern appliances possess considerable flexibility which permits reasonable changes without causing undue difficulty.

The range of changes in these properties is nevertheless limited unless offset by other compensating qualities. Additional study of the "compensating" properties of various gas constituents should prove most profitable.

[1] *Reason—less gas flows through gas orifice per hour while the volume of air injected remains substantially unchanged.*

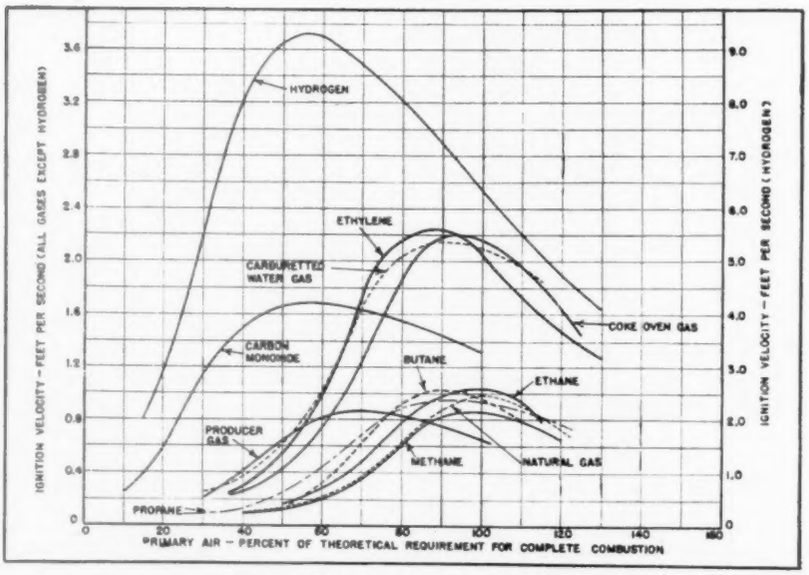

Chart 1. Ignition velocity curves for various gases

If the constituents of a gas are changed, still maintaining about the same Btu. value and specific gravity, the combustion air requirements will probably be changed as well. Unless the air adjustment of appliance burners is corrected for this change, there may be too little air, causing incomplete combustion or too much air resulting in blow-off or flash-back.

A change in the heat input to appliances due to a change in heating value of the gas may also cause operating difficulty. If the heat inputs are raised due to higher Btu. value in the gas, incomplete combustion may occur while a decrease may result in flash-back or lifting of flames. Since a Btu. of one gas and a Btu. in another are of equal practical value, it is important that essentially the same number of Btu. will be supplied to a burner per hour before and after any substitutions of gases take place. The Btu. input per hour to appliances must be held constant within reasonable limits regardless of the Btu. of the gases.

Specific gravity of a gas exerts an influence in two distinct ways. The rate of gas flow varies inversely as the square root of its specific gravity. Therefore an increase in specific gravity will decrease the supply of gas to an appliance and vice-versa. The second effect of specific gravity is on the injection of primary air. As specific gravity increases, so does its energy to inject primary air. Therefore, primary air-gas ratios will rise when a heavier gas replaces a lighter one.[1]

Most complicated of the four properties to consider are the ignition and burning characteristics. The fast burning constituents, primarily hydrogen, strongly accelerate the rate of flame propagation, and this may be the cause of flashback and noisy extinction. A decrease in rate of flame propagation resulting from an increase in slow burning constituents, like methane, will produce opposite results. Propane and butane require considerably more primary air to eliminate yellow tips than does methane, but at 50% primary air or more, this ceases to be a factor for either case. If 20% primary air, natural gas will probably burn satisfactorily while LP-Gases will cause yellow tips.

Chart I shows the rates of flame propagation of natural gas and various other gases in terms of the per cent of primary air. These curves are helpful in predicting probable results of substitute gases. Note, for example, that the *maximum* rates of flame propagation of propane and natural gas are nearly the same, but the peaks do not coincide in terms of primary air. Suppose a burner were adjusted on natural gas at 40% primary air (flame speed approximately 0.1 ft. per second) and then propane-air replaced the natural gas. The primary air percentage might easily go to 50% for the heavier gas and the flame speed would then be almost 0.3 ft. per second. This increase might bring the burner into the flashback zone.

Air has been the generally-accepted carrier gas. It is cheap and universally available. Because the explosive limits of the LP-Gases are narrow, it permits a wide range of mixtures of LP-Gases with air to make any desired heating value, although specific gravities will be high.

To compensate, LP-Gas-Air mixtures suitable for replacing natural gas with a minimum of trouble require heating values substantially higher than the natural gas they replace. When this is done, customers will naturally receive more heat for their money unless this contingency has previously been covered by establishing therm rate schedules.[2] From the viewpoint of gas companies, there is considerable reluctance to supply a high Btu. substitute gas except as an emergency supply. For peak load purposes, the substitute gas must have approximately the same heating value as the regular gas as well as having the same combustion characteristics. This factor has undoubtedly deterred many natural gas companies from adopting LP-Gas-air mixtures as their alternate peak load gas. The difficulties are even greater when considering replacement gases for manufactured gas supplies and, to date, no LP-Gas-air mixtures are used for this purpose. A study made by one of the large eastern companies considering direct addition of butane to their gas supply worked out as quoted:

"Considering coke oven and carburetted water gas distribution, the amount of butane which may be added is small, 2% in the former and 1½% by volume in the latter case. This is equivalent to an increase in heating value of nearly 8%. Taking into account the changes in heating value and specific gravity due to the addition of butane, the increase in thermal input to appliances would average about 5%. The addition of greater quantities might result in unsatisfactory appliance performance due to incomplete combustion, particularly in the case of radiant heaters and instantaneous water heaters."

These considerations highlight the need for a suitable carrier gas which will offset the undesirable features of LP-Gases without losing the major advantage of low investment costs. The actual methods employed by the twenty-five gas companies covered by this report will be briefly described under appropriate sections and their data afford an excellent survey of what has been and is being accomplished along well-established lines of approach. There is now a long history of successful application of LP-Gases to the problems of the gas utility industry, but the uses are rather limited in so far as the long range peak load problem is concerned. Therefore, consideration might be given to other methods for which there is, as yet, little or no field experience and, in many cases, no laboratory test data available.

Fortunately, the empirical formula for testing interchangeability of gases proposed by the American Gas Association Mixed Gas Research Report No. 689 and L. J. Willien's paper[3] "Variations in Interchangeability Formulae in High Btu. Gases," offer a partial or, at least, an approximate method of classifying gases into "possible," "doubtful," and "unsuited" groups. These formulae also make it possible to evaluate modifications in gas mixtures to determine whether a change will improve or detract from interchangeability. These formulae are no substitute for field tests, but when properly employed, they furnish as much assistance as can reasonably be expected from a mathematical analysis of a gas mixing problem. Additional research on oil-gas and LP-Gas as substitutes would probably yield data for further modification of the formulae to take care of the special characteristics of these gases.[4] However, there seems to be evidence that the closer a new gas works out to C = 1.0 (A.G.A. formula) the more interchangeable it will be. The paper by R. M. Conner before the Distribution Conference in May, 1940, is most valuable and instructive on this matter. It is well worth studying in connection with problems involving the flexibility of natural gas appliances.

Exploring the Carrier Gases

The utilization characteristics of the carrier gases have been developed in this section rather than their economic factors, since the latter are so complex and so dependent upon individual circumstances that they would be beyond the scope of this paper. However, those carrier gases have been suggested which are believed to include the lowest in cost of any available materials.

Air	Hydrogen
Blast Furnace Gas	Oil Gases
Blue Gas	Partially Burned Natural Gas
Coke Oven Gas	Producer Gas
Flue Gases	Reformed or Cracked Natular Gas
	Propane Cracked With Steam

Their properties, such as composition, specific gravity, heating value, and combustion air requirements are shown in Table I.

To explore the possibilities of these gases, it was decided to use the American Gas Association Mixed Gas Research formula although it has limitations with respect to the LP-Gases. It appears to be the only method easy of application short of carrying out extensive experimental work, as has already been indicated, this mathematical exploration may serve a useful purpose by classifying the possibilities of the carrier gases pending field tests of their exact properties.

With the help of my assistant, Stanford Setchell, it was possible to compute the interchangeability or "C" factor for a number of the carrier gases with propane, the latter having been selected rather than butane, because of its lower heating value and lower specific gravity. The results of this mathematical exploration are shown in the several parts of Table II and have been plotted on Chart 2 which paints a broad picture of the possibilities of the various gases.

The center of the chart is the intersection of the base natural gas (1116 Btu.) and the "C" factor of one. The curves each show the variation in the "C" factor of mixtures of propane and the different carrier gases as their heating value varies.

In order for a gas to qualify as an ideal replacement for the natural gas, its "C" factor curve should also go through the center of the chart or near to it. None of the practicable gases in Table I would plot through the center but propane plus reformed natural or coke oven gas come the nearest.[5]

Attention may be focussed for a moment on the C = 1.0 line which is crossed at varying Btu. values by each of the curves. All these crossings are at heating values substantially higher than that of the original natural gas. These gas mixtures should be capable of complete exchange for natural gas as well as any desired partial exchange, producing in the latter event, gases of intermediate heating values while still maintaining a "C" factor of 1.0.

The chart indicates that the propane-reformed natural gas mixtures come closest to providing a suitable replacement gas for natural gas.

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[2] *None of the companies using LP-Gas-air mixtures to replace natural gas have adopted therm rates.*

[3] *A.G.A. Proc. 1938, pages 843-856. Note critical discussion of the limitations of these formulae.*

[4] *See Fuel-Flue Gases, Amer. Gas Assn. 1941, p. 74, for equation to determine air injection characteristics of LP-Gases replacing natural gas.*

[5] *Studies made by Benjamin Miller (Gas Advisers, Inc.) in conjunction with the M. W. Kellogg Co. indicate that propane cracked with steam also would produce a gas with suitable properties, although the methods did not seem economically feasible at this time.*

TABLE 1
PROPERTIES OF GASES

Gas	Gross Heating Value B.t.u.	Specific Gravity Air = 1.0	Cubic Feet of Air Required per Cubic Foot of Gas	Analysis of Gas												Products of Combustion—Cubic Feet Per Cubic Foot of Gas		
				CO_2	O_2	N_2	CO	H_2	CH_4	C_3H_8	C_2H_4	C_6H_6	C_3H_6	C_2H_8	C_4H_{10}	H_2O	CO_2	N_2
These Gases Were Computed:																		
Natural Gas	1116	0.64	10.47	0.7	—	0.5	—	—	84.0	14.8	—	—	—	—	—	2.20	1.14	8.28
Propane	2572	1.52	23.82	—	—	—	—	—	—	—	—	—	—	100.0	—	4.17	3.00	18.82
Hydrogen	325	0.070	2.382	—	—	—	—	100.0	—	—	—	—	—	—	—	1.00	—	1.882
Reformed Natural Gas	599	0.41	5.22	1.4	0.2	2.9	9.7	46.6	37.1	—	1.3	—	0.8	—	—	1.30	0.53	4.16
Coke Oven Gas	574	0.44	4.99	2.2	0.8	8.1	6.3	46.5	32.1	—	3.5	0.5	—	—	—	1.25	0.51	4.02
Cracked Natural Gas With Steam	330	0.32	2.46	1.1	—	1.2	23.8	72.0	1.9	—	—	—	—	—	—	0.758	0.268	1.952
Blue Gas (Coke)	287	0.57	2.10	5.4	0.7	8.3	37.0	47.3	1.3	—	—	—	—	—	—	0.53	0.44	1.74
Producer Gas (Bituminous)	163	0.86	1.23	4.5	0.6	50.9	27.0	14.0	3.0	—	—	—	—	—	—	0.23	0.35	1.48
Partially Burned Natural Gas	78.5	0.91	0.62	5.8	—	74.0	8.7	9.6	1.9	—	—	—	—	—	—	0.134	0.164	1.228
Air	0	1.00	—1.00	—	21.0	79.0	—	—	—	—	—	—	—	—	—		(O_2 0.21)	0.79
These Gases Were not Computed:																		
Butane	3225	1.95	30.47	—	—	—	—	—	—	—	—	—	—	7.0	93.0	4.93	3.93	24.07
Refinery Oil Gas—Liquid Phase Cracking	1650	1.00	—	—	0.2	0.6	1.2	6.1	4.4	72.5	—	—	—	—	—	—	—	—
Refinery Oil Gas—Vapor Phase Cracking	1475	0.89	—	0.2	0.2	0.5	1.2	13.1	23.3	21.9	(Illuminants 39.6)				—	—	—	—
High B.t.u. Oil Gas	970	0.65	—	1.5	0.5	4.0	5.0	25.0	39.0	—	(Illuminants 25.0)				—	—	—	—
Oil Gas	551	0.47	4.73	4.7	0.3	3.6	12.7	48.6	26.3	—	2.7	1.1	—	—	—	1.15	0.56	3.77
Reformed Refinery Oil Gas	530	0.51	—	2.3	0.7	4.9	20.8	49.8	12.3	5.5	(Illuminants 3.7)				—	—	—	—
BlastFurnace Gas	92	1.02	0.68	11.5	—	60.0	27.5	1.0	—	—	—	—	—	—	—	0.02	0.39	1.14
Flue Gas	0	0.96	0	11.8	0.1	88.2	0.0	—	—	—	—	—	—	—	—	—	—	—

Their curve crosses C = 1.0 with the least excess in heating value (at about 1290 Btu.) and a considerable part of the various possible mixtures lie within permissible limits. The composition of the mixtures can be seen in Table II. These statements refer to complete replacement of natural gas by the substitute propane-reformed natural gas mixture. If some natural gas is used with the substitute, then performance would be improved and the curve would lie closer to the center of the chart.

Propane-air which is used in so many actual standby plants has the most distant of the curves plotted, C = 1.0 occurring at a rich gas level[6] with a heating value of 1640 Btu.

Less than optimum interchangeability may be permitted and for that reason horizontal lines at C = 1.15 and C = .85 have been drawn; these levels empirically selected, having been established by the A.G.A. Mixed Gas Research. Gases within these limits may be usable depending on local conditions of appliance adjustment on the original natural gas.

The intersection of the curves with the vertical line (1116 Btu.) shows the "C" factor for gas mixtures with a heating value of 1116 Btu. just as the original natural gas. None of these intersections are at C = .85 or above and it therefore follows that none of the gases shown are 100% interchangeable with the original natural gas in mixtures of identical heating value. Propane-reformed natural gas just falls outside the pale. Partial interchange is possible up to the point where the combination would yield C = .85. Such combinations would be less and less satisfactory as the amount of substitute gas was increased. Unfortunately, simple proportion does not furnish an exact method for determining how much substitute gas is permissible. However, it does approximately indicate what percentage can be used with the original gas. * This, in effect, is stating that the "C" factor for the original gas is 1.0 and this permits a certain amount of reduction by adding gases with lower "C" factors.

The A.G.A. Mixed Gas Research Report 645 furnishes detailed information on the permissible percentages of such replacements but has the limitation of being confined to equal heating value mixtures of butane with modifying gases.

Part 2 of this paper will appear in the December issue.—Ed.

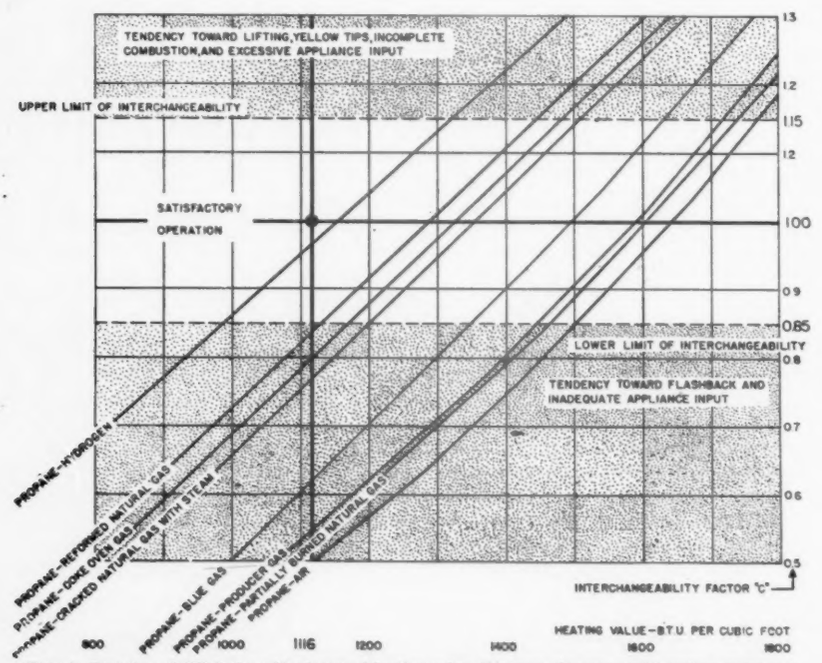

Chart 2 Variation of "C" factor with change of heating value. Mixtures of propane with various gases as a replacement for natural gas

TABLE II

PROPERTIES OF MIXTURES OF PROPANE WITH VARIOUS GASES AS A REPLACEMENT FOR NATURAL GAS

A. Propane—Hydrogen

	30% Propane 70% Hydrogen	**35.3% Propane 64.7% Hydrogen**	40% Propane 60% Hydrogen
1. C. (A.G.A.)	0.858	**0.969**	1.058
2. Heating Value (B.t.u.)	998	**1116**	1224
3. Specific Gravity	0.51	**0.58**	0.65
4. Appliance Input—% of original on Natural Gas	100.1	**105.2**	109.0
5. % of Natural Gas Needed—100% Conversion Efficiency	0	**0**	0
6. % of Natural Gas Needed—80% Conversion Efficiency	0	**0**	0
7. Air Required for Combustion per Cubic Foot—% of that for Natural Gas	84.5	**95.2**	104.8

B. Propane—Reformed Natural Gas

	25% Propane 75% Reformed Natural	**26.2% Propane 73.8% Reformed Natural**	30% Propane 70% Reformed Natural	35% Propane 65% Reformed Natural	40% Propane 60% Reformed Natural	45% Propane 55% Reformed Natural
1. C. (A.G.A.)	0.812	**0.837**	0.911	1.000	1.097	1.185
2. Heating Value (B.t.u.)	1092	**1116**	1190	1290	1389	1488
3. Specific Gravity	0.69	**0.70**	0.74	0.80	0.85	0.91
4. Appliance Input—% of original on Natural Gas	94.2	**95.5**	99.3	103.8	107.7	111.9
5. % of Natural Gas Needed—100% Conversion Efficiency	41.1	**39.6**	35.2	30.3	25.9	22.2
6. % of Natural Gas Needed—80% Conversion Efficiency	51.4	**49.5**	44.0	37.9	32.4	27.8
7. Air Required for Combustion per Cubic Foot—% of that for Natural Gas	94.5	**96.3**	103.5	112.1	121.0	130.0

	C. Propane—Coke Oven Gas		*D. Propane—Cracked Natural Gas with Steam*	
	27.2% Propane 72.8% Coke Oven Gas	*37.8% Propane 62.2% Coke Oven Gas*	*35.2% Propane 64.8% Cracked Natural Gas*	*49.5% Propane 50.5% Cracked Natural Gas*
1. C. (A.G.A.)	**0.796**	1.001	0.769	1.083
2. Heating Value (B.t.u.)	**1116**	1328	1116	1440
3. Specific Gravity	**0.73**	0.85	0.74	0.91
4. Appliance Input—% of original on Natural Gas	**93.5**	103.3	93.0	108.1
5. % of Natural Gas Needed—100% Conversion Efficiency	**0**	0	19.2	15.0
6. % of Natural Gas Needed—80% Conversion Efficiency	**0**	0	24.0	18.7
7. Air Required for Combustion per Cubic Foot—% of that for Natural Gas	**92.5**	116.0	95.6	124.8

E. Propane—Blue Gas (Coke)

	36.4% Propane 63.6% Blue Gas	*45% Propane 55% Blue Gas*	*50% Propane 50% Blue Gas*	*55% Propane 45% Blue Gas*	*60% Propane 40% Blue Gas*
1. C. (A.G.A.)	**0.619**	0.827	0.931	1.048	1.176
2. Heating Value (B.t.u.)	**1116**	1315	1430	1544	1656
3. Specific Gravity	**0.92**	0.99	1.05	1.10	1.14
4. Appliance Input—% of original on Natural Gas	**83.3**	94.8	100.1	105.7	110.9
5. % of Natural Gas Needed—100% Conversion Efficiency	**0**	0	0	0	0
6. % of Natural Gas Needed—80% Conversion Efficiency	**0**	0	0	0	0
7. Air Required for Combustion per Cubic Foot—% of that for Natural Gas	**95.8**	113.4	123.9	134.3	144.9

F. Propane—Producer Gas

	39.7% Propane 60.3% Producer Gas	*50% Propane 50% Producer Gas*	*60% Propane 40% Producer Gas*	*65% Propane 35% Producer Gas*
1. C. (A.G.A.)	**0.544**	0.771	1.017	1.150
2. Heating Value (B.t.u.)	**1116**	1368	1607	1728
3. Specific Gravity	**1.12**	1.19	1.26	1.29
4. Appliance Input—% of original on Natural Gas	**75.5**	89.9	103.0	109.1
5. % of Natural Gas Needed—100% Conversion Efficiency	**0**	0	0	0
6. % of Natural Gas Needed—80% Conversion Efficiency	**0**	0	0	0
7. Air Required for Combustion per Cubic Foot—% of that for Natural Gas	**97.5**	119.9	141.9	152.6

G. Propane—Partially Burned Natural Gas (6:1 Ratio)

	41.6% Propane 58.4% DX Natural Gas	*55% Propane 45% DX Natural Gas*	*60% Propane 40% DX Natural Gas*	*65% Propane 35% DX Natural Gas*	*70% Propane 30% DX Natural Gas*
1. C. (A.G.A.)	**0.532**	0.837	0.965	1.105	1.245
2. Heating Value (B.t.u.)	**1116**	1451	1573	1700	1824
3. Specific Gravity	**1.16**	1.25	1.28	1.31	1.34
4. Appliance Input—% of original on Natural Gas	**74.3**	93.2	100.2	106.7	113.2
5. % of Natural Gas Needed—100% Conversion Efficiency	**4.1**	2.4	2.0	1.6	1.3
6. % of Natural Gas Needed—80% Conversion Efficiency	**5.1**	3.0	2.5	2.0	1.6
7. Air Required for Combustion per Cubic Foot—% of that for Natural Gas	**98.2**	128.0	139.1	150.2	161.1

H. Propane—Air

	43.3% Propane 56.7% Air	*50% Propane 50% Air*	*55% Propane 45% Air*	*60% Propane 40% Air*	*65% Propane 35% Air*	*70% Propane 30% Air*
1. C. (A.G.A.)	**0.496**	0.636	0.761	0.894	1.030	1.182
2. Heating Value (B.t.u.)	**1116**	1286	1415	1542	1671	1800
3. Specific Gravity	**1.23**	1.26	1.29	1.31	1.34	1.36
4. Appliance Input—% of original on Natural Gas	**72.1**	82.9	89.4	96.9	103.8	110.8
5. % of Natural Gas Needed—100% Conversion Efficiency	**0**	0	0	0	0	0
6. % of Natural Gas Needed—80% Conversion Efficiency	**0**	0	0	0	0	0
7. Air Required for Combustion per Cubic Foot—% of that for Natural Gas	**93.2**	109.1	121.0	133.1	144.9	156.8

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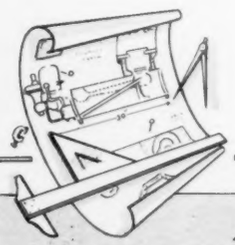

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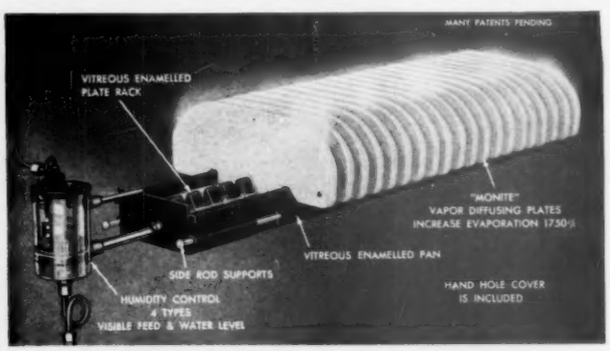
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Conference of Representatives of Natural Gas and Natural Gasoline Industries and Office of Petroleum Coordinator

Hotel Waldorf-Astoria, New York, N. Y.
October 23, 1941

THE objects of this conference are so fully set forth in the addresses of Messrs. J. French Robinson, Chairman of the A.G.A. Natural Gas Section and President of East Ohio Gas Company and of Robert E. Allen, Director of Production, Office of Petroleum Coordinator, that it has seemed unnecessary to do more than publish the essential parts of these addresses.

Part of Address by Mr. J. French Robinson

The Petroleum Coordinator for National Defense has created and is in the process of organizing a Natural Gas Section to coordinate defense activities of the industry with respect to production and transportation of natural gas, and to the processing and manufacture of derivatives of natural gas (including natural gasoline, liquefied petroleum gas, carbon black and recycling operations) and the transportation thereof. To this we pledge our wholehearted devotion to maximum effort on our part for the duration of the emergency. This we do as individuals for our companies and for our industry, the natural gas industry. This is an unshakeable fact which can be taken for granted. The task which we are here to do, however, is to take such practical measures as will actually get the things accomplished which we want to do and can do and that our Government expects of us. We are here to chart a practical, workable, and working plan for the required collaboration to these ends. We are glad to have the gentlemen representing the Government here to help us and we are here to help them.

As an industry, and as companies, we cannot do what is expected of us in this national emergency without the means and the materials for doing our work. At the present time this is a matter of priorities on materials. We understand thoroughly the difficulties which government agencies are up against in this respect. So are we. It is a situation which calls for full acceptance of the co-ordination and collaborative principle.

Meeting of representatives of the Office of Petroleum Coordinator and the natural gas industry in New York, October 23rd, under the auspices of the Natural Gas Section of the American Gas Association. From left to right: Justin Wolf, Paul Raigorodsky, T. J. Strickler, Robert E. Allen, J. French Robinson and E. Holley Poe.

It also implies, I believe, a determination on everyone's part to work in a spirit of complete personal friendliness. This is much more than merely a nicer way to get along. It is very necessary to getting along in the best and most effective manner for the purpose of defending our country.

The natural gas industry which we represent is well known to be essential in two ways; it is an important factor in industrial production at a time when industrial production is all out for armament, and gas is also a basic essential to society and its preservation. This is well recognized and established by the exercise over it of state police powers to protect the people from any avoidable interruption of service. It is also apparent, I think, and we should keep it constantly in mind, that defending a nation involves also preserving the nation so that its people will have it after the duration.

Pipe lines as a means of transportation are essential. It is imperative that these pipe lines be maintained and extended. I speak now solely from the standpoint of gas and the gas industry as they relate to public service and the production of armament in this situation. Our drilling and maintenance of supply by field extensions must continue if the nation is to be served. Our problems of transportation and distribution must be met, and the only way they can be met is by pipe lines. We pledge our complete co-operation with the Government. On the other hand and in return for this, we fully expect freedom from competitive molestation. We ask the means and the materials to do what is expected of us and what we can do. A part of it is in supplying fuel actually demanded in the production of armament materials, and the other part is in sustaining the communities, almost all of them entirely industrial, which depend upon gas as a public service vital to their existence.

To do this, which is a complicated but successfully working and integrated chain of operations covering wide areas and widely separated geographical centers, the work of our industry must go on not only as usual, but much more than "as usual." It must be stepped up in all its parts, for its parts are integrated and mutually dependent on each other. We must produce more gas, we must transport more gas, we must distribute more gas. The extension of city plants to take care of greater needs forced upon us by defense industry expansion and population changes which follow, is as necessary as the production of the gas which supplies their needs. The maintenance of gas production machinery and equipment, is as necessary to the maintenance of gas service for national defense, as the maintenance of street mains and distribution facilities. Any break in the long chain of continued gas service is fatal to the whole.

We are all interested in the flow of gas in our national defense arteries. For that purpose, the flow

and dsitribution of materials necessary to the supply of gas and maintenance of gas service also deeply concerns us all. That is why we are here. It is a big, a difficult and a complicated problem, but we can solve it.

Part of Address by Mr. Robert E. Allen

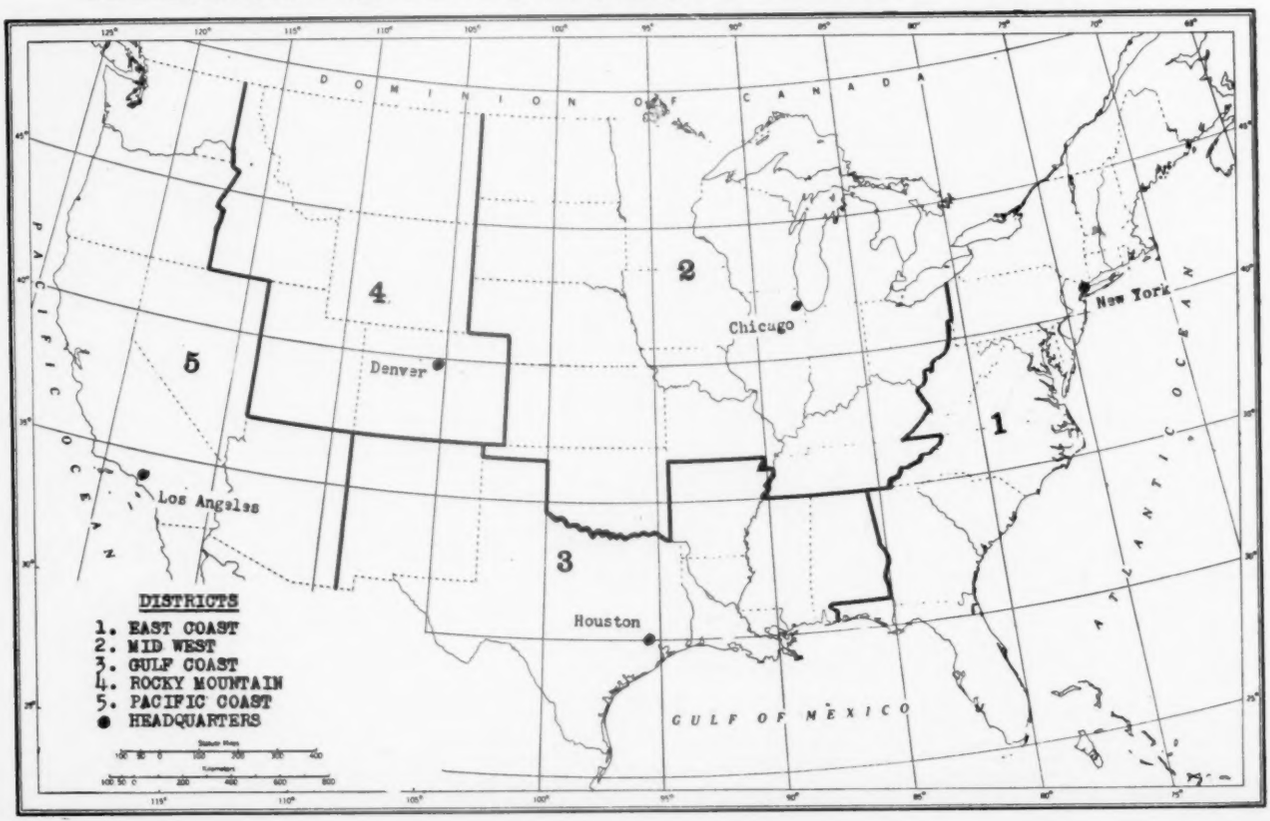
The problem we face today is an important one despite the fact that it may be simply phrased. It is imperative that there shall be maintained adequate supplies of natural gas, natural gasoline, and liquefied petroleum gases to meet the constantly expanding demands of the defense program and essential civilian needs. Natural gas, natural gasoline, and other derivatives are among the Nation's prime energy resources and constitute a vital component of the Nation's fuel supply. These products must be utilized in the current defense program to the utmost limits of their potentialities and the activities of the industries concerned with producing, manufacturing transporting, and selling these products must be coordinated with that supreme national defense effort. This job is not a simple one. It is and it will be a highly complex task to coordinate the resources of a 4 billion dollar industry with the activities of a 100 billion dollar defense program. But the job will be done, and you men—along with representatives of the Federal Government—are the men who will do it.

We start with the premise that the job to be done cannot be done by government alone or by industry alone. The job can be done only if government and industry join forces. Your industries possess skill, technique, resourcefulness and product; government knows where that skill, that technique, that resourcefulness, and that product can best be used to the end that the defense program shall be a success. It is of the essence of the democratic system in which we live that the contributions of government and industry merge for the attainment of the common goal.

To that end the Office of Petroleum Coordinator has taken and plans to take the following action. A Natural Gas and Natural Gasoline Section has been established within the Office of Petroleum Coordinator. In charge of that section is Mr. Paul Raigorodsky, a gentleman whose technical and scientific accomplishments in the natural gasoline industry qualify him as an expert of high rank. Mr. Raigorodsky has chosen as one of his consultants Mr. Thomas R. Weymouth, whose knowledge of and skill in the natural gas industry needs no comment from me. We intend to staff each of our district or regional offices with men who are well qualified by experience and accomplishments as experts in the natural gas and natural gasoline industries. Typical of the men who have indicated their willingness to accept appointments as regional chiefs of our natural gas and natural gasoline sections are Mr. Frank Brewster, President, Belmont-Quadrangle Drilling Co., Bradford, Pa. (District #1), Mr. D. E. Buchanan, President, Hanlon-Buchanan Co., Tulsa, Okla. (District #3), Mr. Robert Hendee, General Manager, Colorado Interstate Gas Co., Colorado Springs, Colo. (District #4), Mr. W. K. Warren, President, Warren Petroleum Corp., Tulsa, Okla. (District #2) and Mr. William Moeller, Jr., Vice President, Southern California Gas Co., Los Angeles, Calif., (District #5). All of these men are well known to you.

The job of the Natural Gas and Natural Gasoline Section will be to coordinate the activities of the natural gas and natural gasoline industries and the activities of the various Federal and State governmental agencies having responsibility with respect to these industries with the national defense program. The duties and responsibilities of this Section and the nature of its work will be

COORDINATION DISTRICTS FOR PETROLEUM AND NATURAL GAS INDUSTRIES



familiar to each of you whose corporate organization possesses an executive committee or other group whose task it is to coordinate and harmonize the varying and manifold activities of the many branches of your businesses. Our action in this respect is taken pursuant to the terms of the letter of the President of the United States dated May 18, 1941 designating Secretary Ickes as the Petroleum Coordinator for National Defense. In that letter, the President said that one of the important problems to be solved in relation to the defense program was "the proper development, production, and utilization of those reserves of crude oils and natural gas that are of strategic importance both in quality and location."

The real effort is to come from the industries themselves at the scene of their operations. Accordingly, the Petroleum Coordinator proposes to enlist the support and aid of you gentlemen in the following fashion. The Petroleum Coordinator will appoint a Natural Gas and Natural Gasoline Industry Committee for each of the five regions or districts into which the country has been divided. You gentlemen of the industry are requested to submit nominations for membership on these committees. The Coordinator will select the personnel of these committees from those nominations. You are requested to submit these nominations to the Petroleum Coordinator's Office in Washington, within ten days from today. In making these nominations, please describe or set forth the qualifications of the nominee which you think qualify him for membership on these committees.

A word or two about these industry committees. They will be independent committees parallel with the existing petroleum industry committees but in no sense or in nowise subservient to these petroleum industry groups. The chairman of each district Natural Gas and Natural Gasoline Committee will serve on and be a member of each District General Committee along with the chairman of each of the functional petroleum industry committees presently operating in each district.

Present plans are to limit these natural gas and natural gasoline committees to 8 members for each district. As time goes on, this number may be expanded. These committees should represent all phases of the industries concerned, that is men familiar with production, transportation and sale of natural gas, and representatives of the natural gasoline industry familiar with the functional divisions of that industry. These committees should also represent a balance between independent organizations and those that are subsidiaries of the large holding companies.

The fundamental responsibility of these committees will be to advise the Petroleum Coordinator with respect to action which they believe should be taken or recommended by him in order to insure the maintenance of an adequate supply of natural gas and natural gasoline to meet defense demands and for essential civilian uses. These committees are not to initiate action by themselves or amongst the industries. They are really advisory consultants to the Petroleum Coordinator with respect to the natural gas and natural gasoline industries. Their importance cannot be overestimated. For frankly, gentlemen, it is these committees, drawing on the wealth and wisdom of their experience, who will provide the government with the facts upon which the government can take or recommend action. Let me assure you now that the one cardinal policy of the Petroleum Coordinator's Office is "get the facts." Both Secretary Ickes and the Deputy Coordi-

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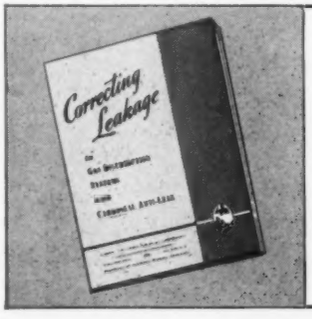
4 and 6	404	72
4	273	60
6	582	95
6	92	100
4 and 6	257	85
4	1,200	100
3	637	63
6	1,600	86.2
3	606	95.3
3	618	100
4	303	95.5
8	713	85.5
4	1,700	91



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nator, Mr. Davies, are men with full respect for "facts"; they have time and again stressed the imperative need for having all facts and data before action shall be taken. These industry committees are to be the source of these all important facts.

I would like to assure you now that the character of these industry committees as fact-gathering, advisory agencies whose activities follow upon direction, recommendation or request from the Office of the Petroleum Coordinator, has been approved by the Department of Justice with respect to the anti-trust laws. I might also add that all recommendations of the Petroleum Coordinator, whether directed to the public, to the industry, to individual persons or companies in the industry, or to the industry committees are cleared through and have the express approval of the anti-trust division of the Department of Justice before publication and issuance.

This Office recognizes that there are several Federal agencies having responsibilities and duties with respect to the natural gas and natural gasoline industries under the various statutes they administer. We also recognize that you have continuing duties and obligations under those statutes.

It is our intention to hold a conference with these other agencies in the near future to draft plans jointly for the coordination of the activities of these Federal governmental agencies as they respect the natural gas and natural gasoline industries.

This Office recognizes the importance of its being a liaison agent or avenue of contact between the natural gas and natural gasoline industries and all of the Federal agencies having authority with respect to these industries. It is our hope and intention to fully perform that function.

I would like to discuss with you some of the detailed problems we will both be called upon to solve, but we all know that it is impossible and unwise to anticipate in advance of specific situations. However, there are a few such problems of a general character that I wish you would consider. Production of natural gas must be so arranged as to insure the maintenance of adequate supply and the conservation of an invaluable natural resource. Cycling or repressuring programs must be developed for many of the condensate or distillate fields. A good deal of thought must be given to the best utilization of natural gas and natural gasoline both by processes, regions, and industries. We must particularly stress the problem of the production and utilization of iso-pentanes, butane, and iso-butanes for the manufacture of aviation gasoline. We must maintain our transportation facilities at peaks of efficiency; perhaps new lines must be built in various sections of the country, certainly we must devise plans to more efficiently use our existing facilities. We must face the very tough problem of maintaining a constant steady supply of natural gas to industries that are truly producing for defense. And fundamental to all of your deliberations you must recognize that the materials and supplies needed to keep your industries functioning are no longer readily available in large quantities, but that the imposition of priorities upon the basic materials or finished products you need and use have raised serious problems of maintenance, repair and expansion. These are a sample of the character of problems that must be solved. Our serious, earnest, and joint efforts are needed if they are to be resolved successfully.

I wish that I could end my remarks on a note of complacency respecting our future. I wish that I could say to you that I was confident that the future demanded no serious sacrifices of us. In all honesty, gentlemen, I cannot. The horrible urgency of our defense effort is an all-pervading reality. We are defending a way of life that has given us privileges and comforts that cannot be measured in ordinary terms. Yet to perpetuate that way of life—that American way of life—we must recognize at once that we are called upon for effort and sacrifice far beyond that which we have known or to which we are accustomed.

Overbeck Elected Chairman of Appalachian Meter School

At the Fourth Annual Appalachian Gas Measurement Short Course, held at the School of Mines, West Virginia University, Morgantown, West Virginia, August 18th, 19th and 20th, 1941, Mr. J. E. Overbeck of the Columbia Engineering Corporation, Columbus, Ohio, was elected Chairman of the School for the coming year.

J. E. Overbeck

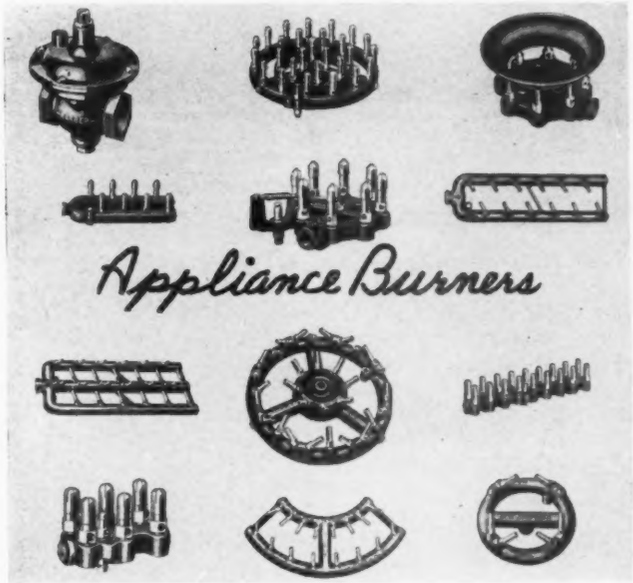
Mr. Overbeck is well known to members of the gas fraternity and, under his energetic leadership, it is expected that the 1942 school will continue the steady growth which has characterized each previous meeting.

The Appalachian Gas Measurement Short Course is the only one of its kind in the Eastern United States. The 1941 meeting attracted 416 registrants, representing 29 States, the District of Columbia and the Dominion of Canada. Employees of 27 manufacturing companies, 74 gas utilities and 6 public service commissions made up the attendance. The interest in the papers read and discussed proved that the theme of the course, "Theory and Practice of the Measurement of Gases," is a subject that commands the attention of the whole gas industry. In addition to the prepared papers and formal proceedings, the numerous and unreported seminar sessions throughout the three day meeting were of utmost interest and value to those attending.

Chemical Industry Medal Presented to Dr. Bolton

The Chemical Industry Medal for 1941 was presented November 7th to Dr. Elmer K. Bolton, Chemical Director of E. I. du Pont de Nemours & Company, at a joint meeting of the American Section of the Society of Chemical Industry, the New York Section of the American Chemical Society and the New York Section of the American Institute of Chemical Engineers, held at the Chemists' Club, New York City. Dr. Lincoln T. Work presided. Dr. C. M. A. Stine, Vice President of the du Pont Company spoke on the personal side of the medallist's life and Professor Roger Adams of the University of Illinois spoke on his technical achievements. The medal, which may be awarded annually for valuable application of chemical research to industry, was presented by Dr. Wallace P. Cohoe, following which Dr. Bolton gave an address on "The Development of Nylon."

He was intimately associated with the research leading to the development of neoprene and nylon, and was in fact instrumental in initiating the research in the du Pont Company on synthetic rubber.



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NATURAL GAS SECTION

American Gas Association

Opening Remarks of Chairman

H. D. Hancock

WE AGAIN assemble in convention for a discussion of the immediate pattern of the problems, responsibilities and opportunities of the natural gas industry and also to the extent now possible, of the more distant patterns which will successively emerge under the changing and increasingly complex conditions expected in future periods. While the manner in which the threads will interweave to form the patterns of such future periods will be determined by many factors, it is one of the few present certainties that the coordinated endeavors of all members in behalf of the industry, as exemplified by the deliberations in all sessions of this convention, will be among the most important of such factors.

H. D. Hancock

The scope of the problems confronting the natural gas industry has not materially altered since our meeting in Dallas in May but **the importance of an emphasis on many features has undergone marked changes. Such changes have been principally the product of the expanding requirements for industrial gas** by plants engaged directly or indirectly in the production of materials required in national defense preparation, for all classes of service by military and naval establishments and for domestic and commercial gas by additional customers in new or expanding industrial areas.

While proceeding with the extraordinary activities necessitated by these emergency requirements, members of the natural gas industry are also engaged in the conduct of their regular business of rendering service to nearly eight million customers in homes and in plants and service establishments which supply the needs of large sections of our civilian population. **Service to domestic customers, as well as to many commercial users, is essential to the general welfare; and the regulations of public authorities, together with considerations of operating practicability and safety, require that the normal rendering of such service be on a complete and continuous basis. While the characteristics of industrial gas deliveries are generally determined by other factors, it is important from many standpoints that they be satisfactory to the customers. Therefore, in contrast to many other industries, the facilities utilized in the natural gas industry in supplying normal civilian needs may not be generally diverted to the purpose of supplying the emergency requirements of national defense preparation.** For these reasons, the gas-fuel requirements of customers engaged in defense activities may become additive, under some operating conditions, to the requirements of the other classes of customers, and the extent to which such superimposing of requirements is planned during any period will determine the amount of additional construction and other preparation which will be necessary in order to supply the aggregate requirements of all classes of customers.

In constructing additional facilities, members of the industry are confronted with the difficulties and delays, presently common to industries which are large users of steel products, in obtaining deliveries of required materials. Such problems relating to material procurements are being approached by the industry with recognition of the many factors involved in effecting the wisest utilization of our national resources during the period of present readjustment of industrial activities. As one of its contributions toward the best solution of these problems, the industry is continuing its efforts to be economical in the use of steel and other essential materials through the continued application of the results of technological advancement, and the seeking through research of further improvement, in the production and utilization of these materials. **Since steel pipe is the major item of material required, it is important that members of the industry are able in the present emergency to reduce their pipe tonnage requirements as the result of continued improvement in the quality of pipe material and processes of fabrication into finished pipe, as well as advancements in methods of protecting pipe from corrosion and in selecting the most economical combinations of size, wall thickness and pressure which will adequately and safely serve the purpose.** The industry is also minimizing its requirements of new steel materials for construction and maintenance purposes through the placing of increased emphasis on the procedure of reclaiming casing, pipe, compressors and other material and equipment from locations where their further use is not justified and, after reconditioning where necessary, reinstalling elsewhere to assist in meeting the requirements of present and anticipated market conditions.

Although the principal present use of natural gas is as a fuel and source of energy, there are also uses of natural gas in synthetic chemical processes which are rapidly growing in importance and number. Many of the products synthesized from natural gas are considered strategic raw materials in the present national defense preparation. Hydrogen produced from natural gas is used in making synthetic ammonia which is employed in the production of nitric acid, which in turn is required in the manufacture of many types of explosives. Formaldehyde, extensively used in the manufacture of plastics, and methanol, from which formaldehyde can be made, are produced from natural gas in amounts estimated to be from one-third to one-fourth of the United States production. Natural gas or some of its components are also used in some or all of the steps in the production of many materials such as alcohols, aldehydes, ketones, acids, esters and nitroparaffins. Natural gas derivatives

Presented at the Annual Convention American Gas Association, Atlantic City, N. J., October 20, 1941.

are also employed in producing synthetic rubber. The production of 100-octane fuel for aviation purposes has become almost exclusively a chemical manufacturing activity and isobutane from natural gas is one of the basic raw materials. There are also extracted from natural gas large quantities of other liquid hydrocarbons for use in many heat applications.

Under no other circumstances have the energy and resources of the natural gas industry been so fully employed as during the present participation in the common cause of national defense preparation. The industry is demonstrating its willingness to voluntarily devote the full extent of its human and material resources to the successful solution of the many economic and technical problems arising, under the present extraordinary conditions, in the production, transmission, distribution and utilization branches of the business. The results obtained in these undertakings indicate that the members of the industry are well prepared to deal effectively with these problems. These accomplishments also assume added significance due to their attainment under the difficulties imposed by the restrictions on the procurement of materials, the ever-present mining hazard in natural gas undertakings and the problems of advancing costs in all branches of the business. Such performance of the industry in dealing with its problems, notwithstanding the difficulties and uncertainties presently prevailing, is a further indication of the soundness of the economic principles which have been and are being followed in its development and of the value of maintaining the economic strength and progressive characteristics which are currently enabling the industry to make its important contributions to the national welfare under the present emergency conditions.

The facilities of the Natural Gas Section, in common with other Sections of the Association, have been made fully available to and are being extensively employed by governmental agencies in studies and consultations relating to national defense preparation. The prompt performance of such services in the national welfare is a further demonstration of the value of having the organized facilities of the Association available for use in any emergency. It is also significant that the efficient performance of these services has been made possible by a prevailing cooperative spirit and, not only a willingness, but eagerness on the part of all committees and members of the industry to devote unlimited time and effort to their assignments.

The true strength of the natural gas industry is not primarily measured by the inventory and valuation of the material possessions of its member companies but rather by an appraisal of the character and spirit of the men comprising the organizations of these companies. While wells, pipelines, engines and other material things are obviously essential in the industry, they are secondary in importance to the qualities of the men who bring them together as going concerns and by their vision and determined adherence to sound fundamental principles are enabled to preserve the values of the respective enterprises. As we travel toward the uncharted road beyond our present horizon, we can, because of knowledge of the character and spirit of the men of the industry, look ahead to the outstanding certainties that the natural gas industry will carry forward and add to its record of courage, competence and resourcefulness—that it will assume the full measure of its responsibilities, develop its opportunities and find the best solutions to its problems—and that in so doing it will merit the continued confidence, appreciation and respect of the public which it serves.

ACCOUNTING SECTION

Report of Chairman

E. N. Keller
Philadelphia Electric Company
Philadelphia, Pa.

LAST October when you honored me with the Chairmanship of the Section, you hoped, rather optimistically, that its affairs would be carried on in such a way as to maintain the high standards previously set. A valiant attempt has been made to fulfill your expectations. Although there have been many headaches and pitfalls along the way, the journey has been for me an education, a pleasure and an experience I wouldn't trade with anyone.

E. N. Keller

Experience during recent years indicated a growing desire to depart from the somewhat fixed custom of studying assigned subjects and writing voluminous reports and to streamline, as it were, the activities of the Accounting Section. This thought fitted in very well with the wish of the majority of the group—to make better use of the brains in the Utility Accounting Fraternity by combining some of the efforts of the corresponding Committee of the Edison Electric Institute with those of our Section. This resulted in a jointly sponsored conference being held in December, 1940, in Detroit, and another one in April in Cincinnati.

Knowing full well the difficulties the various Chairmen had in getting ready for the two Conferences mentioned previously and preparing material for the discussions tomorrow afternoon, I do not believe that anything I can say will adequately express the appreciation they deserve, but I do want to thank them, one and all, for their wholehearted support. I want to thank also all of the men who have contributed in any way to the work of the Section this year, as well as members of the Managing and Advisory Committees whose advice has been so valuable. The headquarters staff, as

Presented at the 23rd Annual Meeting, American Gas Association, Atlantic City, October 20-22, 1941.

usual, has been the reliable mainstay and I wish to publicly express to Mr. Brewer and his staff my appreciation of their courteous cooperation which was unfailing throughout the year.

I do want to mention specifically several Committees who have performed functions somewhat out of routine and I think you should know about it. The Depreciation Accounting Committee during the year has had several contacts with the staff of the Federal Power Commission and members of the N.A.R.U.C. in Washington, but Mr. Hasbrouck will outline that to you a little later.

Mr. Comerford, the Chairman of the Uniform Classification of Accounts Committee for Natural Gas at my request appointed a special Committee to study a proposed annual report form of the Federal Power Commission designed for the use of natural gas companies. His Committee did an excellent job on this and submitted very pointed suggestions and criticisms to the Commission and on September 22 had a meeting with representatives of the Commission in Washington. He will tell you briefly about this meeting a little later.

It seems that the willing and able workers always get the mean jobs. Our friend George Fuchs having performed so excellently almost as a Committee of one in arranging the luncheon conferences last year, I asked him to do it again this year. I know you will find that the arrangements will testify to the thoroughness of his efforts.

It isn't often that the Editorial Committee has an opportunity to display its talents but this year they did a very excellent job in bringing up to date and publishing a new Compendium Report which is carrying out the idea which was originated I believe, back in 1934. It is issued, of course, in the nature of an index to the work of the Accounting Section since its inception. I suspect that Wallace Murfit, the Chairman of this Committee, did most of the work himself and I know the Section will find the report valuable.

As indicated previously, the character of the work during this year has been such as to eliminate almost entirely extended Committee studies and the preparation of the usual reports. Therefore, there isn't much unfinished business.

A. G. A. Refrigeration Campaign

UNDER the chairmanship of Bernard T. Franck, committee chairman for the past two years for the A. G. A. Refrigeration Campaign, the winning companies in the 6 divisions, which include 35 classifications, participated in the permanent possession of the Servel Annual Best Performance Trophy for 1940 to '41.

Forty seven representatives of the companies named left Atlantic City for Miami on October 22nd by special railroad cars. A 7-hour stop-over in Washington was made.

On the 24th they left for Havana, Cuba, or Nassau for an over-night visit. On the return trip, both parties attended the floor show in the Tropical Gardens of the Shore Club at Miami on the 25th. Sunday, the 26th, was given over to a sightseeing trip by boat, golf or a fishing trip. Dinner at the hotel on Sunday night concluded the program. The company winners in their various divisions were as follows:

Division 1—Brooklyn Union Gas Co., Brooklyn, N. Y.; Southern Counties Gas Co., Los Angeles, Calif.; Southern California Gas Co., Los Angeles, Calif.; Boston Consolidated Gas Co., Boston, Mass.

Division 2—Milwaukee Gas Light Co., Milwaukee, Wis.; Providence Gas Co., Providence, R. I.; Birmingham Gas Co., Birmingham, Ala.; Queens Borough Gas & Electric Co., Far Rockaway, L. I., N. Y.; Kings Appliance Corp., Brooklyn, N. Y.; Brooklyn Borough Gas Co., Coney Island, N. Y.

Division 3—Fall River Gas Works Co., Fall River, Mass.; Central Illinois Light Co., Springfield, Ill.; Peoples Water & Gas Co., Miami Beach, Fla.; Florida Public Utilities Co., West Palm Beach, Fla.

Division 4—Washington Gas Light Co., Washington, D. C.; Atlanta Gas Light Co., Atlanta, Ga.; Metropolitan Utilities District, Omaha, Neb.; The Gas Service Co., Wichita, Kans.; Gas Department, Corpus Christi, Texas; Mobile Gas Service Corp., Mobile, Ala.; Dallas Gas Co., Dallas, Texas.

Division 5—Macon Gas Co., Macon, Ga.; Empire Gas Appliance Corp., Hornell, N. Y.; Alabama Gas Co., Montgomery, Ala.; Manufacturers Light & Heat Co., Bellevue, Pa.

Division 6—The Gas Service Co., Carthage, Mo.; Oklahoma Natural Gas Co., Lamont, Okla.; Roanoke Gas Co., Salem, Va.; Manufacturers Gas Co., Bradford, Pa.

In planning gas refrigeration activities for the new year beginning October 1, 1941, the A. G. A. Refrigeration Committee has recognized several very important facts, acccording to C. V. Sorenson, incoming chairman.

First, the tremendous strides made by the gas industry in the field of gas refrigeration under the capable guidance of the Refrigeration Committee during recent years, especially during the past two years under the leadership of B. T. Franck, outgoing chairman.

Second, the extraordinary general conditions which will prevail because of the Defense Program during the coming year.

Third, certain specific conditions that we know will confront us during the immediate future.

"Next year's operations will present new problems to every gas company executive as well as to the Committee and the manufacturer," said Mr. Sorenson in a recent interview. "These problems call for the best judgment and ability of every sales manager.

"Because present conditions make inappropriate many standards used in the past to determine the winners of the individual and company Annual Best Performance Awards, new bases have been set up to qualify those doing the best job during the coming year.

"The experience of previous years has been used to reclassify some of the divisions upon a more equitable basis, but the schedule of salesmen's awards during the first quarter has been continued.

Gas Rate Study

Senator LaFollette, Wisconsin, submitted the following resolution; which was considered and agreed to by the Senate October 9:

Resolved, That the Federal Power Commission be, and it is hereby, directed to furnish to the Senate—(1) A list of all cities in the United States of fifty thousand population and over, according to the 1940 census, that are served with (a) natural gas, (b) manufactured gas, and (c) mixed gas; and the prices charged for such gas by the retail distributors, whether publicly or privately owned, to all classes of residential customers; and (2) A list of all other cities and communities in which there are gas-distribution systems, segregated by geographic areas, and the prices charged for (a) natural gas, (b) manufactured gas, and (c) mixed gas by the retail distributors, whether publicly or privately owned, to all classes of residential customers.

SEC. 2. That the above reports when received be printed as a Senate document.—*A.G.A.*

RESIDENTIAL GAS SECTION

THE FIRST meeting was morning of Oct. 20, and presiding was R. J. Rutherford, Chairman.

In a paper prepared by Clifford E. Paige, President Brooklyn Union Gas Co. He stated that during the previous world war the sales activities of the company were curtailed very sharply. In 1922 sales activities were renewed and an almost new sales force had to be built and trained. That experience will not be repeated now. He stressed the fact that the present sales force had been trained in the sale of various gas appliances and not one or two. This enables the company to keep doing a sales job by building new markets. "We cannot afford to lose our trained sales force," he said.

H. T. Ryan, V-Pres. Robertshaw Thermostat Co., Youngwood, Pa., who is also a member of the A.G.A.-E.M. Defense Committee, explained that his company felt they would be able to supply demands for heat control devices, but now no one knows what regulation and priorities may come out of the OPM later on. His company had their plant surveyed by the War Department and it was found that there was a device used in munitions manufacture similar in its tolerance and precision to a thermostat, and that his company bid on and secured a government contract. He stated that it had been of valuable assistance to them and enabled them to fulfill the civilian demands and to manufacture the munitions component in large quantities.

Next was a panel discussion consisting of:

N. B. Bertolette, President,
The Hartford Gas Company,
Hartford, Conn.
J. P. Leinroth, General Industrial Fuel Representative,
Public Service Electric and Gas Company,
Newark, N. J.
F. M. Rosenkrans, New Business Manager,
The Gas Service Company,
Kansas City, Mo.
Robert A. Hornby, Vice President,
Pacific Lighting Corporation,
San Francisco, Calif.
D. A. Hulcy, President,
Lone Star Gas Company,
Dallas, Texas
A. J. Strain, Superintendent of Domestic Sales
The Consumers Gas Company of Toronto,
Toronto, Ontario
Louis Ruthenburg, President,
Servel, Inc.,
Evansville, Indiana

The first few questions asked by Chairman Rutherford concerned promotional activities during the emergency. In answer to the question "Did your company discontinue appliance sales during the last war?" those companies that were then selling appliances did not curtail their efforts to any extent.

To the question of maintaining sales and home service personnel during this period, those of the panel representing American companies stated that the sales and home service departments would be kept at as high a level as possible. Mr. Strain of Toronto, stated that he agreed with the others on the panel, but that they had many problems in Canada that we do not have in the States. He stated "We are limited only to Canadian manufacturers; an excise tax of 25% had been placed on all appliances and the terms had been changed to $100 down and the balance in twelve months and that prices had been frozen to the level between Sept. 15th and Oct. 15th.

In reply to the question of advertising budgets the consensus of opinion was that there would not be much reduction. As companies would not have as many appliances to sell in 1942 as 1941, part of the space would be used for institutional advertising. Mr. Ruthenburg stated that a constructive attitude towards advertising was that a manufacturer or utility that has spent a great deal of money has created a definite asset and the curtailment of advertising was not so much a reduction in current expenses but the destruction of an already created asset.

The Tuesday afternoon session was in charge of E. J. Boyer, Sales Manager, Minn. Gas Light Co. Chairman of the section for the coming year.

CHAIRMAN AND MEMBERS OF THE PANEL DISCUSSION

From Left to Right: R. J. Rutherford, Chairman, Worcester Gas Light Co., Worcester, Mass.; Louis Ruthenburg, Pres., Servel, Inc., Evansville, Ind.; A. J. Strain, The Consumers Gas Co. of Toronto, Canada; D. A. Hulcy, Pres., Lone Star Gas Co., Dallas, Texas; Robert A. Hornby, V. P., Pacific Lighting Corp., San Francisco, Calif.; F. M. Rosenkrans, The Gas Service Co., Kansas City, Mo.; J. P. Leinroth, Public Service Electric & Gas Co., Newark, N. J.; N. B. Bertolette, Pres., The Hartford Gas Co., Hartford, Conn.

Industrial and Commercial Gas Section

TWO SESSIONS of this section were held at the Traymore.

Both sessions were presided over by H. Carl Wolf, chairman of the section and president of the Atlanta Gas Light Company.

Following Mr. Wolf's opening address, a brief greeting to the section was offered by the incoming president of the Association, George S. Hawley, president of the Bridgeport Gas Light Company.

Franklin T. Rainey, chairman of the Nominating Committee, announced the appointment of George F. B. Owens, assistant vice-president, The Brooklyn Union Gas Company, as chairman for the ensuing year, and B. H. Gardner, vice-president, Columbia Engineering Corporation of Columbus, as vice-chairman. Both were elected to office by a unanimous vote of those present.

Industrial gas at work in production for national defense was covered with a series of talks by various company executives, as follows:

Frank H. Adams, president, Surface Combustion Corp., Toledo, in his discussion stated that the great defense appropriation constitutes a challenge to the gas industry, that the comprehensive use of gas in many operations will tax the capacity of many gas companies in industrial areas.

He referred to improvement in design of heat treating furnaces and closer temperature control. In the present situation it is not a question of "how much business we can get, but what we can take care of." He stated that considerable responsibility rests with the salesman of industrial gas equipment. The purchaser needs his guidance as many plants are operating furnaces today with men of insufficient training.

F. M. Banks, vice-president, Southern California Gas Co., Los Angeles, said that 90 per cent of the natural gas produced is in conjunction with oil. In the matter of rates he referred to the supply to army camps, stating that rates for such service vary from 25c to ordinary domestic rates.

Walter C. Beckjord, vice-president and general manager, Columbia Gas & Electric Corp., New York, in his talk stated that the defense load is growing by leaps and bounds. That 75 per cent of the industrial load is for defense business and calls for forty to fifty million cubic feet a year.

He felt that electric competition after the present emergency will be stiff.

R. L. Fletcher, vice-president, Providence Gas Company, Providence, presented a picture of New England demands for gas for defense purposes. That gas for army ordnance, small arms and ammunition is supplied many plants in Massachusetts, Connecticut and Rhode Island as well as plants producing copper and steel products, machine tools, etc. That gas is also supplied in this area to shipyards and for aircraft engine production.

Herman Russell, president, Rochester Gas & Electric Corp., Rochester, made special reference to the local industrial load in the Rochester district. That gas for heat treating in this area provides an income of approximately $400,000 a year. He referred at some length to the recently formed Institute of Gas Technology and heartily endorsed this activity.

Their company, he said, was experiencing a growth in the domestic load as a result of more home cooking due to increased prices of food provided by restaurants.

Edward J. Tucker, director and general manager, Consumers Gas Co. of Toronto, gave an interesting review of the war activities in Canada, stressing the point that Canada entered this war of its volition. He gave an interesting presentation of Canada's war activities and the large number of the population engaged in them either directly or indirectly. That there are over 100,000 Canadian soldiers and sailors over-seas, with a total of 320,000 in active service. Some 10,000 of these are Americans.

At the second session on the afternoon of the 21st Mr. Wolf again presided. The first paper presented was by Elroy L. Payne, vice-president and general manager, Payne Furnace & Supply Co., Beverly Hills, Calif., on "increasing your heating business in commercial establishments." This was read by Frank C. Packer in the absence of the author. He brought out four principal points to consider in the sale of heating equipment. (1) Is the job properly sold? (2) The equipment must be sized so it will do the job for which it is sold. (3) There must be proper installment of equipment. (4) The customer should have "service" so as to maintain the equipment at high efficiency.

"Opportunities I see for selling commercial gas" was the subject selected by O. F. Keune, sales manager, Florida Power & Light Co. Miami. He felt that the commercial field is one of great promise. In their territory they had made a very complete survey of prospects, which was then passed along to the engineering department who made a study of them and was followed by an analysis by the rate department. He felt that the profitable sales program requires a definite formula. Furthermore, that there should be one salesman or sales engineer for 400 accounts, and recommended that the salesman see all customers two or three times each year. He referred to the hearty cooperation of manufacturers of equipment for commercial use.

"New counter gas appliances,—your tools for future business," was a dramatic presentation by Carl Sorby, promotion director, George D. Roper Corp. This was presented in true "Sorby" style.

On the stage were a group of "back bar" counter appliances of modern types. These included sterilizer, hot plates, deep fat fryer, coffee and hot water urn, toaster, 6-unit coffee percolator, broiler and hot table, this last using direct gas heat and was not the steam table type. He gave a stimulating address on how the salesman could go about getting the business for these appliances, presenting his story in excellent dramatic fashion.

Johns-Manville Elects John A. O'Brien V. P.

The election of John A. O'Brien to the post of vice president of Johns-Manville Sales Corporation was announced on October 1st by Lewis H. Brown, president of Johns-Manville.

Mr. O'Brien will continue his duties as general sales manager of the power products and industrial department, a post he has held since 1938. He is a member of the J-M Quarter Century Club, having begun his career with the company in 1915, and is a member of the Engineers Club, New York.

Abstracts of Technical Section Papers and Reports

Interesting Developments Concerning the Savings of Gas Oil by Mixing High Btu. Coke Oven Gas and Blue Gas

By
R. E. Kruger, Supt., Gas Mfg. Dept.
Rochester Gas & Electric Corporation, Rochester, N. Y.

During the past 15 years the gas load at Rochester has been carried by furnishing to all customers a mixture of coke oven gas and producer gas having a Btu. of 538 to 540. Enough plant capacity was available so that a very large part of the entire yearly load could be taken care of in this way. In later years when the load could not be met in the above manner, we mixed in carburetted water gas of about 550 Btu. to meet increased loads brought about by extremes in winter temperatures or by emergencies of one type or another. This seemed to us to be the logical way for us to carry our loads.

Our coke oven gas has an average Btu. value of 636, and the producer gas mixed with it has a Btu. value of 140. These were mixed in such proportion that the mixture had a Btu. value of 550. After the mixture was put through the light oil scrubbers, it had a Btu. of 538-540.

By so generally carrying our total sendout with this coke oven gas mixture, we, of course, made a corresponding tonnage of coke which in Rochester has always been very largely sold on the local domestic market. As all oven operators know the success of coke oven operation depends very largely upon the coke market, and those of us who operate coke ovens in the utility field fully realize the advantages of meeting the gas load in a given community with oven gas and by so doing have the privilege of dispensing all of the resultant coke to that same community at a fair price. Such a setup in many ways is ideal, but as might be expected we were not always able to completely move all the coke we made, and not believing there was much to be gained by large stock piles, we controlled our stocks by making less coke which meant making less coke oven gas than was necessary to meet our gas loads so that we had to make water gas to make up the difference. This, of course, used up coke so that we had a two-way method of controlling coke stock. Compared with straight coke oven operation, however, it was a rather expensive one chiefly because gas oil, of course, had to be used. As time went on and our gas loads became greater particularly during the winter season, more and more water gas had to be made entailing, of course, the purchase of greater quantities of gas oil. Strangely enough there were times when even the larger amounts of water gas made did not require enough coke to keep our coke stock as closely in hand as desired.

Along with the extra cost of water gas and the increasing amounts necessary, we began to notice an increase in complaints from our customers on our gas distribution system. These periods of increased complaints seem to coincide with the periods of fairly heavy water gas additions to our normal coke oven—producer gas mixture. A large share of the complaints came about through pilot outages, flashbacks, and noisy extinction. . . .

There had been some indication that our service men were setting our flames too hard so that when the water gas was added they became harder, and many of them went out or flashed back. . . .

By studying the rates of gas input to a burner and by studying the more important phenomena of air-gas ratios in burner head (both old and newer types), we were able to instruct our service men in a way that got us away from so many service complaints. This work was very much worth while, a lot was learned, and curiously enough the service men were not the only ones who learned it. Our laboratory staff learned a lot as did also the supervisory staff of both the gas distribution and gas manufacturing departments. . . .

However, this did not solve our problem for we still had to make water gas and at times of a Btu. value higher than 550 so the work can only be considered to be a step in the right direction. . . . A small amount of work seemed to indicate that a mixture of our coke oven gas and blue gas behaved just as well or better than did a mixture of coke oven gas and producer gas. . . . If it were true that it were better to mix coke oven gas and blue gas than to mix coke oven gas and producer gas, an interesting set of possibilities appeared on the scene—for example, we could materially increase the output of 550 Btu. gas from our ovens for obviously more blue gas of 300 Btu. can be added to a 636 Btu. coke oven gas than can producer gas at 140 Btu. and likewise less of the 550 Btu. water gas need be made. Also, it would take more coke to make blue gas than to make 550 Btu. water gas. This would help control our coke stock. So here was an opportunity to by one stroke achieve both our objectives. From a commonsense point of view it amounted to this: Excess coke in stock is nothing more than so many Btu.'s; gas oil bought from an oil company likewise is nothing more than so many Btu.'s, so why should I buy Btu.'s from an oil company when I've already got a yard full of them in a form that I can use. This seemed very much worth while developing—first, from a purely mathematical point of view, and even rough basic considerations along this line indicated that a lot could be accomplished. From an operating point of view there was in our case nothing to worry about for we had the water gas machine equipment already installed and all set to operate. The matter of mixing was no problem at all; we could put the blue gas into the same place we formerly put producer gas for mixing or we could just as well introduce it into the coke oven system in other places.

From an operating point of view there was then not much to the problem. Experience over some years of operation indicate that when we operated our coke ovens at capacity, we produced 12,621 M of 636 Btu. oven gas, and when we mixed this with

The following tabulation will show the quantities of materials used in each case when making 17,309 M of sendout gas of 545 B.t.u.

	Oven Gas	Prod. Gas	Prod. Gas Fuel	Water Gas	Water Gas Fuel	Blue Gas	Blue Gas Fuel	Gas Oil	Total Coke
Prod. Gas Mixing	12,621	2,859 M	20.4	1,829 M	27.5 T	....	...	5670	47.9 T
Blue Gas Mixing	12,621	....	...	....	...	4,688 M	93.7 T	....	93.7 T
								Diff. =	45.8 T

140 Btu. producer gas, we produced 15,480 M of a mixture of oven gas and producer gas having a Btu. of 545. In this case the oven gas represented 81.3% of the mixture and producer gas 18.7%.

Now, if we use blue gas for mixing, the same 12,621 M of 636 Btu. oven gas gives a mixture of 17,309 M having a Btu. of 545. Here the oven gas represents 72.8% of the mixture and blue gas 27.2%. It is obvious that we have increased our coke oven gas capacity from 15,480 M/day to 17,309 M/day without carbonizing additional coal. And, obviously we could meet 17,309 M sendouts without making any carburetted water gas whereas before we could only meet a sendout of 15,480 M without making water gas.

It is at once obvious that in this setup we made 45.8 tons of coke do the job formerly done by 5670 gal. of gas oil, and since this was excess coke, we considered it good business, and whether it be good business at any time depends largely upon the price relationship between coke and gas oil or more broadly between generator fuel and enriching oil. This, of course, anyone can quickly determine in any given instance. That in brief is all there is to this from an operating point of view. If this oven gas-blue gas mixture could be used successfully by our gas distribution system, we should go ahead with our mixing in that manner.

Inasmuch as so much depended upon getting a correct answer to this, we disregarded laboratory setups and got our answer by technically observing actual customer appliances operating on various mixtures of oven gas and blue gas and later operating on several other mixtures. . . .

To summarize what has been considered rather thoroughly thus far: We were definitely sure we could make the blue gas necessary for this method of operation, and as far as the plant operations were concerned, everything pointed to blue gas addition as being more desirable and the extensive test work on appliances strongly indicated we had improvements to gain as far as utilization was concerned, so we had enough to proceed to meet directly our winter loads of 1940-41 by adding blue gas to our oven gas and making as little 540 Btu. water gas as possible and consequently using as little gas oil as possible. The advantage in presenting this paper at this time is that we have had an opportunity to actively operate this system over a winter peak and from an operating point of view, all our preliminary work has been proved to be correct.

The following tabulation will show briefly the pertinent operating data covering gas load production for the winter season of 1939-1940 as compared to that of 1940-41, the period in each case being December-April (both inclusive):

A casual observation will indicate the following:

1. Total load carried is about the same for both periods.
2. The amount of gas oil used was considerably less.
3. The amount coke used was more by about 7300 tons.

From an operating point of view then we accomplished all we had out to do. From a gas distribution point of view as far as troubles on that system were concerned, including customer service complaints, it was the best the department has ever had. Actually, the service complaints were about 20% less. What portion of this decrease was due to the training given our service men in properly adjusting appliance burners and what part is due to the type of gas we distributed is of course rather hard to tell, perhaps impossible to tell. The net result with which this paper is mainly concerned was gratifying. The experience was so satisfactory that we intend to do the same again this coming winter season.

	Total S.O.	W. Gas Made	Coke Used	Oil Used	Oil/M	Fuel/M
1939-40	2,482,542 M	171,580 M	2,738 T	506,046 gal.	2.95 gal.	32.0 lbs.
1940-41	2,478,617 M	539,241 M	10,038 T	176,895 gal.	.33 gal.	39.6 lbs.

Appliance Servicing

By
H. G. Horstman
Public Service Co. of Indiana, Indianapolis, Ind.
and
W. H. Weber
The Brooklyn Union Gas Co., Brooklyn, N. Y.

The paper on "Training Servicemen by Use of Recurring Service Orders," distributed at the spring Distribution Conference, has caused considerable discussion and many companies have inaugurated new plans and procedures to check their own operations. D. S. Bittinger, of the Washington Gas Light Company, has defined a repeat call as a "recurring service order because of lack of care, lack of judgment, lack of knowledge or incomplete report on the part of the previous serviceman and does not include faults not chargeable to the serviceman such as improper design or construction of the equipment, condition of the equipment, acts of the customer and the miscellaneous causes beyond our control."

Some companies have set a period of only thirty days as their "service watch" period as it has been their experience that deficient service work was usually evidenced within that period and that many other factors were introduced into a longer period. The general opinion of the committee, however, was that the check for repeat calls should be maintained for a longer time, preferably a six months' period.

Some companies are referring "repeat calls" back to the man who made the original adjustment. This tends to place the responsibility on each serviceman of getting his own work done in such a way that there would be as few recurring orders as possible. *"Only by a system which provides that servicemen go back on repeat calls will they get the training necessary to enable them to eliminate additional calls on their work. When this plan is followed, servicemen benefit because not only does it give them a chance for valuable training but it also saves them the embarrassment that results from others doing their work."

** Training Servicemen by Use of Recurring Service Orders—Subcommittee on Appliance Servicing—1941 Distribution Conference.*

The manufacturers of appliances will be faced with problems of materials, priorities, delivery commitments, manufacturing and assembly difficulties and in our opinion it may be difficult to maintain the standard of workmanship of recent years. Those operating companies who adopt a program of pre-testing or shop testing of all appliances will be able to call immediate attention to poor quality to the manufacturers or they will be able to correct minor difficulties prior to the installation of the appliance. Reports from companies who have inaugurated a plan for shop testing all appliances before they are installed on customers' premises indicate complete satisfaction with this work, and their records show a definite reduction in service calls on new appliances. One company reported that a "certificate of merit" tag placed on all appliances so tested and inspected has been well received.

The findings of a subcommittee on allowable pressure variations were that, where required, the installation of appliance regulators on CP ranges has greatly minimized recurring service orders and has made for greater acceptance of gas. The installation of appliance filters by one company has resulted in a 20% reduction of service calls.

The topic suggested most frequently at the open forum meeting on Appliance Servicing in Pittsburgh last spring related to "Are we giving too much free service?" "Our appliance servicing costs increase year after year." "How far should we go in servicing appliances sold by dealers?"

Modern load building programs indicate that the trend is toward more and more dealer selling. Some companies report that whereas a few years ago they pioneered the gas home heating field, now only 20%-30% of the load being added is actually sold by the companies. By active, careful assistance and close cooperation, the dealers now account for 70%-80% of the business. The job of servicing appliances sold by dealers is generally handled by the utility company but, as Mr. Little pointed out in his paper delivered at the 1941 Distribution Conference, a large proportion of the service calls required are made on appliances not sold by the utility. And therein lies a problem that few companies have solved. What program has your company followed in training dealer representatives to control inputs properly, adjust thermostats and to make automatic lighters really function?

Service costs are increasing and as a result reviews of service costs and policies are being given serious consideration. It appears that most companies are feeling their way, but the trend is toward some sort of charge. Many companies already have maintenance agreements for refrigerators and some have similar agreements for cleaning and maintenance of house heating equipment, but charging for regular calls is less common. Several companies have already put into effect charges for all calls on ranges and refrigerators out of warranty. Both their sales and service divisions report that no great amount of adverse criticism has been made or that the charges affect sales. These companies were very careful in inaugurating their plans to explain the new policy fully to their customers.

Only two companies that charge for calls on water heaters and house heaters exclusive of start ups on boilers in the fall have come to our attention. The trend nevertheless is evident, and it is well for all to consider the factors that are involved in this step. Higher taxes, increased labor rates, and national defense demands may force the issue sooner than we expect.

Motor Vehicles in the Gas Industry

By

Jean Y. Ray

Virginia Electric & Power Co.,
Richmond, Va.

Today practically everything used in the operation of our fleets, including the vehicles themselves, is at a premium. Under the present priority assigned to vehicle and parts manufacturers, it appears that it will be possible to obtain heavy and medium size trucks and parts to keep them in operation; however, there is no priority asigned to cover the manufacture of light trucks and passenger cars. Since the light vehicles make up the larger part of our fleet and it also appears that it is going to be increasingly difficult to buy trucks in the larger sizes, it is now more important than ever to maintain our equipment in good mechanical condition in order to postpone the time when replacements become necessary.

While the Office of Production Management has promised that there will be ample replacement parts for repair and maintenance and has assigned an A-10 rating to help obtain these parts, it is nevertheless a fact that certain parts are already very hard to obtain and the present tendency on the part of those who regulate these things is to place many other types of fleets ahead of utilities in order of importance.

The tire situation also demands our close attention and certain large truck sizes are far from plentiful. Indications are that this will not clear up until after the government has accumulated the stocks of crude rubber that is necessary as protection against possible shutting off of supplies from the East Indies.

It has been suggested that our transportation men secure a supply of materials and spare parts to hold in storerooms against the time when local distributors and dealers can no longer make deliveries. This should be done to a certain extent but care must be used to prevent an overstock of parts that may become obsolete. It should also be borne in mind that companies using the A-10 priority rating to obtain materials for repair and maintenance to plant and distribution systems agree to keep inventories within the limits of stocks on hand as of December 31, 1940. An excessive inventory in any one department might bar a company from using the rating in connection with material needed by other departments.

While the administration of a fleet of trucks is necessarily an operating matter, it is far more important that the general policies of each company in its particular locality be carefully studied and applied to the transportation departments, so that all needless expense, built up by an over-zealous operator, may be de-emphasized. Only the continuous daily requirements for service, throughout every day in the year, should control the need for company owned motor vehicles. Spasmodic seasonal demands for additional vehicles should be cared for by a more intensive use of vehicles already in service with the aid of hired cartage. This will tend to keep the number of vehicles at a minimum and increase the usage of those already in service. In the studies that are being made by the Central Motor Transportation Committee, under OPM, a great deal of attention will be given to excess equipment and the intensity of usage vehicles.

Recovery of "Pyridine Bases" From Coke Oven Gas and Methods For Determining Them

By
H. J. Meredith,
Chief Chemist

Koppers Company, Seaboard Division,
Kearny, N. J.

Considerable interest in pyridine has been aroused in the past two or three years which undoubtedly can be attributed to the spectacular success of sulphapyridine in the medical field. Enough of this drug can be made from the pyridine from one ton of coal to treat about three cases of pneumonia so that the potential palliative from a coke plant carbonizing 3000 tons a day would relieve the suffering of about 3,500,000 persons per year. It is doubtful therefore that the present demands for pyridine are entirely due to the medicinal requirements and especially so when it is recognized that sulphapyridine has to compete with other drugs such as sulphanylamid and hydroxy-methyl apocuprein, etc. However, we were asked to recover "pyridine bases" from our gas to meet the increasing demand and after making preliminary tests to find out how it could be done most economically, installed the continuous process described in this paper.

The term "pyridine bases" was used in the title of this report to conform with popular terminology, but since they are only a fraction of the total bases and are often confused with pyridine itself, the expression "tar bases" has been adopted instead and will be used in this paper in connection with any of the work done by the writer or his associates.

TAR BASES

The tar bases are a mixture of aromatic nitrogen bearing ring compounds which are formed during the coking process either as primary products from the thermal decomposition of coal substance or as products of secondary reaction occurring in the gas. A complete list of those actually identified can be found in most text books on coal carbonization or tar distillation, e.g. (4, 5, 6). They come over with the crude gas from the coke ovens, some condense out with the tar and the balance remain in the gas. The latter are mainly the lower boiling fractions rich in pyridine and of special interest when this is in demand, since the pyridine in the tar is usually not readily available under present tar refining methods.

Tar Bases in Tar

The tar base content of tar varies from about 2 to 4% depending on the source of the tar. Weiss and Downs (7) report 2.3% (mostly pyridine, picolines, lutidines, quinolines and acridine). Reilly Tar and Chemical Corp. (9) give the following:

	% Original Tar
Crude Bases	2.0
Pyridine	0.1
Heavy Bases	1.9
Total	4.0

From this the pyridine in the tar bases is seen to be 2.5%.

An analysis of the tar bases from tar was made by Wilson and Wells (8) who report:

Boiling Range °C.	*Tar Base Isomer*	*% Of Total Bases*
	Pyridine	7
125-145	Picolines	10
145-170	Lutidines	7
170-180	Collidines	3
180-230	——	30
230-240	Quinolines	24
240-280	——	19
Total		100

In his paper on "New Methods for the Recovery of Pyridine from By-

FLASH SHOTS HERE AND THERE

(1) H. P. Boncher, Dresser Mfg. Company, Bradford, Pa.; T. M. Gilbert, Cutler-Hammer, Inc., New York City; J. H. Eiseman, U. S. Bureau of Standards.

(2) R. D. Williams, Hudson Valley Fuel Corp., Troy, N. Y.; R. H. Arndt, Vice Chairman, Gas Production Committee, Cons. Gas Elec. Lt. & Pr. Co. of Baltimore; D. P. Hartson, Chairman, Technical Section, Equitable Gas Co., Pittsburgh, Pa.

(3) R. Van Vliet, New York & Richmond Gas Co., Staten Island, N. Y.; George F. Briggmann, Carbide & Carbon Chem. Corp., N.Y.C.

(4) H. O. Andrew, Gas Age, New York; A. I. Phillips, American Gas Journal, New York.

Photos A. Gordon King

Product Coke Plants," Dr. W. Klempt (10) reports that, after a survey of the coke industry in the Ruhr district for 1938, a total of 900 metric tons of denaturing grade pyridine were available in the tar from the production of 38,000,000 metric tons of coke. Assuming a 70% coke yield and a yield of 10 gals. of tar (9.8 lbs. per gal.) per ton, this is equivalent to about 0.034% of the tar by weight and 0.033 lbs. per ton of coal. Since these figures are for denaturing pyridine (distilling at least 90% below 160° C.) it is seen that the maximum actual pyridine recoverable from this tar is not more than about 0.01 lbs. per ton, assuming that about 30% of the denaturing pyridine is pyridine. This is very much lower than what is reported for American coke oven tars.

On the basis of the data from Weiss and Downs, Wilson and Wells, and Reilly Tar, it is concluded that the total tar basis recoverable from tar amounts to an average of about 3.0 lbs. per ton of which 4 to 5% is pyridine.

Tar Bases in Gas

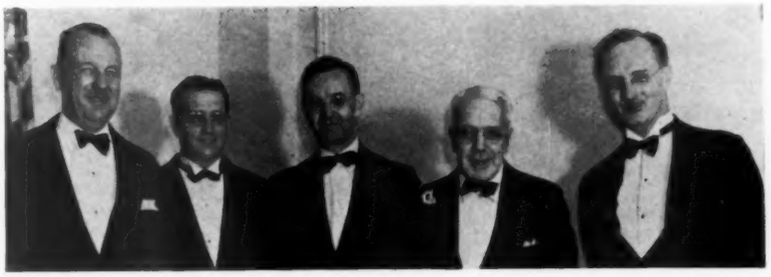
The tar bases which remain in the gas can be recovered from the saturator liquor or, if the gas has not been previously scrubbed with water, from the light oil. The actual amount present of course would vary with local conditions. Wald (3) reports a recovery of from 0.15 to 0.20 lbs. of crude bases per ton of coal. These contain from 50 to 60 per cent tar bases, about half of which is pyridine. This indicates that the gas contains from 0.04 to 0.06 lbs. of pyridine per ton of coal and probably represents the maximum recoverable from coke oven gas.

Uses for Tar Bases

The tar bases are a source of the refined pyridine bases (denaturing pyridine), pyridine and the picolines, all of which have a certain market value.

Refined Pyridine Bases: These were used for denaturing alcohol in the United States until a few years ago when they were replaced largely by other denaturants. They are still used in Europe, however, and until the war started, considerable quantities were exported for that purpose. The U. S. Internal Revenue Bureau Specifications for "Refined Pyridine Bases" contain the following requirements:

"When 100 cc. are subjected to the determination of the boiling point in the same manner as prescribed for wood alcohol, at least 50 cc. must distill at 140° C., and at least 90 cc. at 160° C."



(Left to right) John H. Wolfe, Cons. Gas Elec. Lt. & Pr. Co. of Baltimore; H. L. Gaidry, Vice Chairman, Technical Section, New Orleans Public Service Inc., New Orleans, La.; D. P. Hartson, Chairman, Technical Section, Equitable Gas Co., Pittsburgh, Pa.: S. P. Cobb, Tbasco Services, Inc., New York; A. Gordon King, Secretary, Technical Section, A.G.A. Headquarters, N. Y. C.
Photo A. Gordon King

Pyridine: Pyridine is possibly the most important constituent of the tar bases and has various industrial uses as a solvent in the rubber, paint and plastic industries. It is a starting material in organic synthesis of industrial and pharmaceutical chemicals such as piperidine dipiperidyl, sulphapyridine, etc. It is used in making chemicals for waterproofing fabrics and leather, as an ingredient in insecticides, and as a catalyst in the manufacture of dyes and chemicals 11, 12).

The Picolines, etc. There appears to be a market for the picolines which in the past have been sold as part of the denaturing pyridine bases. As far as the writer is aware, there is no market for the higher boiling components of the tar bases.

Recovery of Tar Bases from Saturator Liquor

General

In the "semi direct" process for manufacturing ammonium sulphate the gas from the ovens after passing through indirect coolers and tar extractors is bubbled through a bath whose acidity is maintained at approximately 6% H_2SO_4 as determined by tritration with standard sodium carbonate using methyl orange indicator.

This gas contains all the ammonia produced and all the tar bases except those that condensed out with the tar and the small amount lost in the still waste. The "tar bases" remaining in the gas are mainly pyridine and its homologues, the higher boiling tar bases having condensed with the tar.

The extent to which the saturator liquor removes these tar bases from the gas depends on the acidity, the temperature of the bath and the amount present. Under normal conditions when no recovery of tar bases is made, the concentration in the liquor builds up to from 50 to 70 grams per liter (2, 3) and what enters with the gas either leaves with it or deposits out with the ammonium sulphate.

When recovery is practiced, the equilibrium between the gas and the saturator liquor is disturbed and the concentration of the tar bases in the liquor is reduced to an amount which depends on the extent of the recovery. At about 20 grams per liter (2) no pyridine can be found in the ammonium sulphate. This should be of special interest to producers who experience difficulty in manufacturing a suitable dry neutral salt, since the acidity of $(NH_4)_2SO_4$ resulting from drying will be greater when pyridine sulphate is present (13).

If saturator liquor be withdrawn from the saturators at a rate of y gallons per minute for the removal of tar bases, the final concentration of tar bases in the liquor will reach a constant value, x grams per liter, which is dependent entirely on y, and the production of tar bases P will be found from the expression—

$$P = \frac{(x)(3.785)(y)(60)(24)}{(454)} = (12)(x)(y) \text{ lbs. per day.}$$

To design a plant properly it is necessary to know the tar base content of the gas entering the saturators, the per cent recovery desired, and the concentration of tar bases in the liquor in equilibrium with the outlet gas. The equilibrium data are not easily obtained and so the simplest procedure is to calculate how much saturator liquor can be neutralized by the vapors from the ammonia stills and design a plant to handle that amount. For example, the amount of liquor containing 60 grams per liter of equivalent H_2SO_4 that can be neutralized in a coke plant producing 70,000 gals. of ammonia liquor (5 g.p.l. total NH_3) is about 11 gallons per minute. Actually in the writer's opinion, most of the de-

(Continued on page 77)

On the left: Gild Members and Burghers in earnest debate. Right: To the right of the rostrum is a group of the CP Rangers.

Ye Gild of Supplers Convenes with Wassail

The Gild of Ancient Supplers of Gas Appliances, Skills, Gins, Accessories and Substances held its fifth annual convocation Monday evening at the Hotel Madison, Atlantic City.

Each year the Gild whose membership is limited to executives and representatives who have served at least ten years with manufacturers supplying the gas industry, invited gas men, who in Gild language are known as burghers, to join with them in an annual celebration. This year instead of a feast the Gild invited its members and guests to a Wassail, or in more modern terms, a cocktail party.

The highlight of the evening was the election of Major Forward of the American Gas Association to an Honorable Membership and the presentation of the CP Range contest winners to the more than 300 present.

Earlier in the afternoon the biennial election was held and the following officers were elected. Mayor, C. Edwin Bartlett, Philadelphia; Senior Warden, Joseph A. Mulcare, New York; Keeper of the Treasure, Glenn H. Niles, Paterson, N. J.; Clerk, A. E. Lindequist, New York; Alderman, E. Carl Sorby, Rockford, Illinois; Frank C. Packer, Girard, California; Joseph A. Messenger, New York.

William S. Guitteau, the retiring Mayor and the leading spirit in the formation of the Gild four years ago, was presented with a gold ring engraved with the insignia of the Gild.

Carl Sorby in making the presentation brought out the fact that the Gild was Bill Guitteau's inspiration and it was through his work and leadership that it has met with such great success and acceptance in the gas industry.

It was founded at the Pennsylvania Gas Association Convention in 1937 when a group of veteran supplers met and took definite action toward organizing the Gild to whose membership they knew they could call many men of similar qualifications throughout the country.

Mr. Sorby brought out that Bill Guitteau personified the high type of service which supplers represent. For over thirty years Bill Guitteau has served the gas industry and has made countless friends whose trust and confidence in him are the result of their observation and experiences with him over the years.

Mr. Guitteau has always been one of the most colorful figures in the gas industry. His first job was selling Welsbach Lamps with the Toledo Gas Company of which his father was General Manager. In 1909 Bill went with the Lloyd Construction Company in Detroit and ever since then has been with engineering construction companies serving the gas industry; most of that time with the exception of a few short intervals has been with the International Stacey Company or its affiliates, where he is now Manager of the New York office.

William G. Hamilton Promoted

American Meter Company has announced the recent promotion of William G. Hamilton, Jr., to the position of Assistant Manager of the Philadelphia factory and sales territory, in recognition of his consistent contributions to the production and sales engineering of the Company's products.

After formal education at Penn Charter Academy and Swarthmore College, Mr. Hamilton joined the organization December 1, 1927 with the Helme & McIlhenny

William G. Hamilton

factory, which some years ago was consolidated with the John J. Griffin & Co. factory into American Meter Company, 1513 Race Street, Philadelphia. Since then he has applied himself extensively with great success particularly in the fields of pressure regulation, flow measurement and flow control, and will continue to specialize on this important phase of the Company's engineering service.

He is a member of the Engineers Club of Philadelphia, the Huntingdon Valley Country Club and the Penn Valley Golf Club.

RECENT COURT DECISIONS Affecting Gas Utilities

How To Avoid Legal Complications

By
Leo T. Parker
Attorney at Law
Cincinnati, Ohio

FREQUENTLY gas company officials become entangled in litigations involving the right of states, municipalities and Public Utilities Commissions to pass valid laws and regulations. Recently, the higher courts have rendered several unusually important decisions on variations of the modern law on this subject. Therefore, we shall review these interesting cases.

First, it is important to know that power of states and municipalities to regulate rates of public utilities is inherent. It is legislative in character and is a part of the natural police power. The state may, within limits, contract with a utility as to the rates to be charged, yet it may well be doubted if under the modern rule it can irrevocably surrender all regulatory power. For example, the power of municipalities and Public Service Commissions to establish valid gas rates must be based upon the authority of state laws, but the state cannot surrender its full power to any agency. Moreover, the state legislature may at its pleasure revoke or repeal old laws and regulations.

For example, in the leading case of Pawhuska v. Pawhuska Gas Company, 250 U.S. 395, after a state law was passed which authorized municipalities to grant franchises, a city granted a franchise to a gas company to use the streets and supply gas to the city and its inhabitants. In view of the powers granted by the state law the city at this time had sole authority to regulate the charges for gas and services to be rendered by the gas company.

Later the state enacted a new law giving the right to the Public Utilities Commission to regulate rates to be charged for gas. After due consideration the Public Utilities Commission increased the rates, and the counsel for the city contended that the new rates were void because the new law unlawfully delegated power to the Public Utilities Commission. It is interesting to know that the Supreme Court of the United States held the new law valid, saying:

"The municipality, being a mere agent of the state, stands in its governmental or public character in no contract relation with its sovereign, at whose pleasure its charter may be amended, changed, or revoked, without the impairment of any constitutional obligation."

Validity of Gas Rates

Although a Public Service Commission may fix a fair value of gas company property, for rate-making purposes, yet since rates affect the future due consideration must also be given to the past, as well as to the immediate present, in order that a reasonable rate may be established. And for these reasons the modern courts are likely to uphold a valuation considerably higher than the present cost of reproduction.

This is so because the criteria at hand for ascertaining the market value of gas company property is not commonly available. In other words, the value of the gas company property must be determined under inescapable limitations, since the courts have refused to be bound by any artificial rule or formula which our present unusual or future changed conditions might importantly vary.

Another important point of law, particularly interesting to readers, involves the legal right of a gas company to classify its consumers and establish *different* rates for consumers in different classifications. The modern courts realize that innumerable considerations must necessarily enter into the question of determining gas rates. Therefore, in fixing its rates, the distributor and seller of gas must consider the cost of its product, as well as the ability of the consumer to advantageously use it in his business. Also, the gas seller must consider the competition it must meet from the distributors of other fuels, such as wood, coal, oil, electricity. And the volume to be supplied is an important consideration as also is the cost of distribution.

For these various reasons no valid complaint can be based upon a plea that a rate is discriminative, or unreasonable and warrants a suit for an overcharge, without clear proof that consumers operating under similar conditions and circumstances have the benefit of a lesser rate. Therefore, a gas company may legally and without discrimination establish a lower rate to a classification of consumers *whose service is less expensive*, or with less hazard, than is charged service supplied other consumers. See Wolf v. United Gas Public Service Company, 77 S. W. (2d) 1091.

Low Rate Held Void

Still another important point of law is that gas companies may not legally sell gas for less than rates specified by valid laws.

For illustration, in Mapleton v. Iowa Public Service Company, 223 N. W. 476, it was shown that a state law was passed which provides that municipalities shall have power to regulate and fix the rate for water, gas heat, light, or power.

A city ordinance fixed the gas rate, but the public utility fixed its rate lower than the ordinance rating. The city filed suit to compel the utility company to increase its rates to those specified in the ordinance. The counsel for the public utility contended that the above quoted state law is invalid, but the court held that the public utility must charge the rates specified in the ordinance, saying:

"On the face of the record, each party appears to be contending for the privilege of generosity toward the other. Apparently, also, neither party has a grievance. . . . The reader of the forego-

ing will naturally query: What is the matter? Where is the storm area? Why the tempest? Here is the rub: A public utility, operating under a franchise, has no constitutional right of competition. . . . The business of a public utility, under statutory regulation, becomes, by force of the statute, a legal monopoly."

Therefore, it is quite apparent that a *valid* city gas rate ordinance is valid and enforceable although the gas company may desire to sell gas at a lower rate than the rate specified by the ordinance. Obviously, however, it is seldom that city officials would endeavor to compel a gas company to charge a higher rate for gas than the rate specified by the company unless such officials have an unusually good reason. In the above explained case the city also sold gas and the city officials did not desire the gas company to cut the customary rates.

Power of Municipalities

Municipalities have two classes or kinds of powers. One, legislative or governmental, in the exercise of which it acts as a sovereign; the other, proprietary or business, in the exercise of which it acts and contracts for the private advantages of the city and its inhabitants.

Generally speaking, in the exercise of governmental powers, the officers of a city cannot make a valid grant or contract which will bind the municipality beyond the terms of their offices. The courts have adopted this rule because no municipal official may lawfully circumscribe the legislative powers of their successors. On the other hand, in the exercise of the business or proprietary powers of a city, the officers are limited by no such rule and they may lawfully exercise power to make contracts in the same manner and for the same purpose as other private business officials.

With respect to granting gas franchises, various courts have held that the validity of a franchise always depends upon whether its provisions are authorized by the state constitution. And, unless the state constitution authorizes the granting of franchises in the manner designated by a state law, or city ordinance, the franchise is void.

Of course, the power to grant franchises usually is vested by the state legislature in the municipalities of the state. It is well settled that a franchise *not in its terms exclusive* has no power to prevent the state or municipality from granting a franchise to another corporation, even though the latter franchise greatly impairs or destroys the value of the former. In other words, no franchise will be held exclusive unless the intention to grant an exclusive privilege clearly appears.

Legally, a franchise is a right or privilege granted by the sovereignty to one or more parties to do some act or acts, which they could not do without this grant from the sovereign power. Moreover, a municipality, in granting a franchise to a gas corporation, which permits the use of the streets and alleys for the purpose of furnishing the citizens with gas, acts as a governmental agency of the state, whereas if the municipality sells gas it does so in a proprietary or ministerial capacity.

It is well known that a municipality which exercises the latter mentioned powers is liable for all acts of its officials in exactly the same degree as any other seller of gas. However, a municipality is not liable for negligence of its officials who act in a governmental capacity.

On the other hand, any contract properly authorized by a state law is valid and enforceable by the terms of which a municipality grants a franchise and enters into a contract to purchase gas at a stipulated price. This is so because while the municipal officials perform governmental powers when granting the franchise the matter of their negligence is not involved.

For instance, in Griffin v. Natural Gas, 37 F (2d) 545, it was shown that a city entered into a contract with a gas company by the terms of which the city agreed to purchase from the latter all the gas required by the city for fuel in the operation of its waterworks power plant. The contract contained a clause by which the gas company agreed to furnish gas to the inhabitants of the municipality at a stipulated cost, and the gas company was given the exclusive right for five years to furnish gas to its water plant and to the inhabitants.

Suit was filed on the contention that the contracts were void because the franchise gave the gas company the exclusive right to furnish the gas for the water plant and to the inhabitants for five years. It is interesting to know that the court held the contracts valid, stating the following important law:

"A franchise is a special privilege conferred by government upon individuals and which does not belong to the citizens of the country, generally, of common right. . . . We think, in view of the expenditure necessary to be made to furnish gas to the city and the fact that the c ty was the only customer for such gas. an exclusive contract for a period of five years was reasonable. . . ."

The importance of this decision lies in the fact that not only did this contract forfeit all rights of the city, for a period of five years, to endeavor to purchase cheaper gas but the gas company also was given an exclusive right to sell gas to the inhabitants at an agreed price for a period of five years. Thus, while acting in a governmental capacity the municipal officials obligated the municipality itself; the waterworks department; the inhabitants; and the gas company.

News of the Gas Industry

Industrial Adaptability, Preparation for Future and the Defense Program Chief Topics at Servel Sales Convention

Industrial adaptability in a time of unprecedented national emergency, the necessity for complete cooperation with the defense program, and the importance of constant preparation for a transition from a period of defense activity to eventual normal economic conditions, keynoted the annual sales convention of Servel, Inc., held at French Lick, Ind., October 8-12.

Executives, department heads, sales department members and field representatives from all sections of the United States attended the five-day meeting which had as its theme, "Looking Ahead." This year's convention was, as George S. Jones, Jr., Servel vice-president and general sales manager, expressed it, a "working session" in every sense of the word with all in attendaance fully aware of the import of the occasion.

A three-point program which included constant preparation for a transition from a period of defense activity to normal economic conditions, was urged by Louis Ruthenburg, president of Servel.

Mr. Ruthenburg prescribed expansion of the company in connection with the defense program and special effort to sell as many gas refrigerators as possible next year in the face of contentions that a sellers' market exists.

"Don't you let anybody kid you about a sellers' market," he cautioned. "Yes, there has been one—but there are too many impediments in its way. It isn't a market easy from a salesman's standpoint."

The need of the hour, he said, is to find out how to adjust to an environment changing faster now than at any time in the country's history.

"The price paid for survival and progress is adaptability to changing environment," Mr. Ruthenburg said. "We must try to find out how to offset this adaptability. We must prepare mentally and physically to meet the future market by keeping the ground fallow through keeping up sales contacts. One way of becoming adaptable to changing environment is by getting out of ruts. It may be better for us to think in terms new and changing."

George S. Jones, Jr., Servel Vice President and General Sales Manager, foresaw that "the time is coming—sooner, perhaps, than we think—when goods will pile up faster than customers."

"Most of our problems thus far have been concerned with production," Mr. Jones said. "It is not difficult to foresee, however, that sales may become our chief problem in the not too distant future. Higher prices, increased taxes, larger down-payments, shorter terms and many other factors will naturally discourage buying. Add to all this an alarming loss of salesmen who are turning to other fields of work and you will see we have a real selling job ahead. The time is surely coming—sooner, perhaps, than we think—when goods will pile up faster than customers. One of the chief objectives of this convention, therefore, is to plan our strategy for the time when intensive selling effort will be more necessary than ever before."

Reviewing progress and plans of the company, Mr. Ruthenburg said that the "Good Ship Servel" had taken on new cargo; two new products: gas air-conditioning and automatic water heating.

Taking on these two new products, he declared, was in keeping with the company policy to develop products for the public which would also provide new uses for gas. He also said that the company was aiding the government program through defense contracts and hoped to expand in that direction.

Regarding present-day gas refrigerator manufacturing problems, Dr. William R. Hainsworth, Vice President and Research Director, said that research forced by the emergency would result in new developments which would improve the refrigerator of the future. This had been brought about, he said, by material shortages which had necessitated use of plastics and other substitutes.

"Give more and extra service now, more than ever in the past, and we won't have cause to regret it later when support is needed more," Elon V. Ekman, of New York, a member of the board of directors told the sales representatives.

"Not business as usual—but service as usual, should be the order of the day," H. A. Strong, of San Francisco, Calif., vice-president of Servel, advised. "In this new order of things a sales presentation must have back of it—sincerity, flexibility and workability. Then too, and more important, we cannot dis-associate spiritual values from material values and expect to get anywhere. And what is more, we and other businesses are going to be faced more and more with three words of major import: flexibility, adaptability and workability.

"An all-out defense program means exactly what it says," Mr. Strong declared. "Our company is supporting it to full extent and we can help a great deal by aiding national morale through meeting to the fullest the civilian needs and requirements. If we wish to preserve the fine freedoms we enjoy we must give our full support."

At the conclusion of a symposium at which advertising and sales promotion plans for 1942 to aid utilities and other outlets in selling Servel gas refrigerators, gas air-conditioning and gas automatic hot water heaters were presented, Mr. Jones warned against tendencies toward economic defeatism and asserted: "Wars may come and wars may go but economic warfare goes on forever and we must be prepared to keep our products and policies known to the public, our outlets and above all the salesman."

William Reynolds, of New York, advertising director, said the advertising program planned in accordance with restricted production caused by national defense activity, would include newspaper, magazine and direct mail advertising. Aimed at keeping the Servel story "in the forefront of the public mind," Mr. Reynolds said the plans proposed were flexible.

The advertising program was submitted to the sales executives in the form of a panel discussion participated in by members of the Batten, Barton, Durstine and Osborn agency of New York.

A sales training program geared to changing conditions to help adjust salesmen of utility and other outlets to the present situation, was outlined by R. J. Canniff, sales promotion manager. He said there was a need for trained instructors to conduct sales training programs and that Servel in 1942 would offer such an aid through the "Servel Sales Seminar." Typical phases of the "Sales Seminar" plan were presented by Dolph Jansen, Jr., assistant sales promotion manager; J. V. Monaghan, A. D. Howard, C. A. Spiegel and Frances Cowing, all of Evansville.

A new line of products to be manufactured by Servel in such volume as conditions permit, including several models of gas-operated automatic water heaters, was presented by Harry Newcomb, manager of the automatic gas water heater division. J. K. Knighton, manager of the air-conditioning division, reported that the company's new all-year-round air-conditioning unit operated by gas which both heats and cools, had been enthusiastically received last year.

A highlight of the convention was the presentation by Mr. Jones of special awards for "continuous and meritorious service" to several score representatives attending the gathering. Granting of medals to the company's employees was instituted several years ago. Medals are presented for 15-year and ten to two-year periods of service, inclusive.

Whitwell Succeeds Sellman as Chairman of Laboratories Managing Committee

On October 1, 1941, Nils T. Sellman tendered his resignation as Chairman of the Laboratories Managing Committee of the American Gas Association. He was more responsible than any other single individual for the preparation of initial plans for the Laboratories' construction and operation and actively participating in their consummation. His foresight and executive ability are evidenced by the facts that only minor changes have been made in these plans, and that today the Laboratories are the largest agencies of their kind in the world. The modern Pacific Coast Branch, erected in 1939, reflects his leadership and is one of the outstanding accomplishments occurring during his term of office.

Mr. Sellman has been a member of the Laboratories Managing Committee since its organization in 1924. First in the capacity of Secretary and from 1938 until his recent resignation as Chairman, he has contributed much to the Laboratories' rapid growth and high standing in the gas industry. Always looking forward to utilizing their facilities to their fullest extent, he has been responsible to a large degree for their expanded activities. There is no doubt that during his chairmanship they have experienced the most successful years of their existence.

Succeeding Mr. Sellman, George E. Whitwell, Vice-President in Charge of Sales of the Philadelphia Electric Company, has been appointed Chairman of the Laboratories Managing Committee. With the exception of Raymond M. Conner, Director of the Testing Laboratories, Mr. Whitwell is senior member of this committee in years of service. He was appointed in July, 1928, at the time the Cleveland Laboratories made their first major expansion and the new Laboratories building was erected. He has served continuously since that date. In the years which have followed, Mr. Whitwell watched the Laboratories experience their greatest growth and expansion of activities.

William Reynolds Elected President of Noise Abatement Council

Decision to draw up a year-round program for the reduction of noise in homes, offices, industries and public places, for use by communities throughout the nation, and the election of William Reynolds, Advertising Manager, Servel, Inc., of New York, as president of the National Noise Abatement Council, were announced by the Council October 24th at the conclusion of the two-day sessions held at the Hotel Algonquin, New York.

Photo Bachrach

William Reynolds, of New York City, advertising manager of Servel, Inc., who was elected president of the National Noise Abatement Council. He succeeds G. P. Little, of The Celotex Corp., Chicago.

Plans for the year-round national noise abatement program just decided upon will get under way immediately. It is said to be the first such activity ever undertaken on a nation-wide scale, and will be available not only to the Council's own organized local committees but to all civic and public groups interested in furthering the cause of noise control.

A. W. Jones, of Standard Gas Goes With O.P.M.

Arthur W. Jones, Sales Promotion Manager of Standard Gas Equipment Corporation, has been called to Washington to work with O.P.M.

Mr. Jones has been appointed Chief Statistician of the Shoe and Leather Products section of O.P.M. For several years he was Economist of the National Boot and Shoe Manufacturers Association and Code Authority. While there he acquired a detailed knowledge of the Boot and Shoe Industry which is now being called into use.

A leave of absence has been given to Mr. Jones, and he expects to return to Standard Gas when his work in Washington is completed. In the meantime, his assistant, Robert E. Laffin, will carry on.

W. Frank Roberts, President of Standard Gas Equipment Corporation is O.P.M. Coordinator for Maryland and is also in charge of priorities in Baltimore, with a large staff working under his direction.

New Refinery Catalog Presents Nordstrom Valves

Presenting for the first time in one volume all Nordstrom Valves used in refinery operations, a new catalog has just been issued by Merco Nordstrom Valve Company. It consists of 104 pages, plastic bound, and presents ninety-eight Nordco Steel Valves and one hundred twenty-one Semi-Steel Valves. Each valve illustrated is accompanied by full specifications, range of sizes, dimensions, working and test pressure or A.S.A. ratings, methods of operation and notes regarding flanges, templates, etc. Cross sectional views of the basic types of Nordstrom Valves are shown.

Valves listed include Standard types, Hypreseals, Steam Jacketed, Multiports and flexible coupling adaptations, with wrench, worm or spur gear operation. Air, meter and service cocks are also listed.

In the Multiport section, detailed port and stop arrangements are shown in a group of drawings to indicate the application of this type of valve for replacing straightway types with a saving in piping and fittings.

In the accessory section, wrenches, adapters, locking devices, high and low head extensions, chain wheels, remote controls, cylinder units, gear housings and road boxes are presented.

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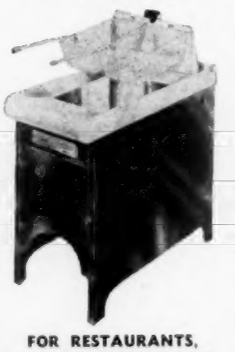

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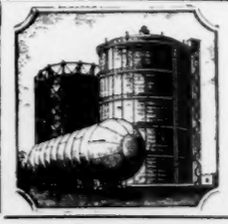

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venient reference tables list templates for drilling, pressure and temperature ratings, ring joint and special facings for steel valves and companion flanges, cap screw and stud data and A.P.I. special alloy steel flanges for 3000-lb. cold working pressure ring joints.

A newly revised table of Nordco Lubricants is listed, including several new compounds for special refinery service.

This new catalog (V-139) is beautifully printed on enameled book paper and should prove to be a valuable reference for refinery engineers. A copy may be obtained by writing to Merco Nordstrom Valve Company, 400 Lexington Avenue, Pittsburgh, Penna.

Connelly Announces Photo Contest Winners

The 1941 Photographic contest, sponsored by Connelly Iron Sponge & Governor Co., of Chicago, closed on August 31st. This contest, open to gas company employees and their families, provided for a number of cash prizes ranging from $3.00 to $100.00.

The board of judges was composed of Samuel Insull, Jr., of Chicago, Lester Eck of Minneapolis Light & Gas Company, and Vernon G. Leach of Peabody Coal Company, Chicago. In view of the surprisingly large number of entries as well as the exceptional quality of the work, they were confronted with a rather difficult job in choosing the photos of greatest merit.

The Grand Prize of $100.00 was awarded to C. J. Cramer of the Ohio Fuel Gas Company of Toledo for his unusual photograph of a Connelly H_2S Tester in operation.

Prizes of $25.00 each were awarded to Floyd Rogers, Albion Gas Light Co., Albion, Michigan, for his "Purifier Manifold," and I. F. Patt, Providence Gas Co., Providence, R. I., for a photo entitled "Purifying Boxes"; while $10.00 prizes went to Russell Goodman, Portland Gas & Coke Co., Portland, Oregon, and Grayum Davis, United Gas Corp., San Marcos, Texas.

Among other prize winners were Julien Jordan, Peoples Gas Light & Coke Co., Chicago, Ill., H. H. Crook, Citizens Gas & Coke Utility, Indianapolis, Herbert Kerr, Knoxville Gas Co., Knoxville, Tenn., Albert Crownfield, Jr., Boston Consolidated Gas Co., Boston, Massachusetts, Leon J. Willien, Public Utilities Engineering & Service Corp., Chicago, H. J. Reichert, Michigan Consolidated Gas Co., Muskegon, Michigan, and C. J. Smith, South Carolina Power Co., Charleston, South Carolina.

C. J. Cramer, holding his Grand Prize winning photo and check for $100.00

Eighteen prize winners received a total of $258.00 for their efforts in this contest. Quite a number of the pictures submitted were found to be admirably suited to advertising use and will no doubt appear from time to time in Connelly advertising literature.

School of Mines Employs Oil and Gas Instructor

The School of Mines of West Virginia University announces the appointment of Mr. Robert F. Davisson of Grafton and Charleston, West Virginia, as instructor in oil and gas engineering. Mr. Davisson was a graduate of the School of Mines in the oil and gas option in the class of 1939. Since that time he has been employed with the Pittsburgh Equitable Meter Company in investigating and test work on gas measurement meters and regulators. Mr. Davisson comes to the University from the West Virginia Public Service Commission where he has been employed for the last year and a half as a field gas engineer. Mr. Davisson is widely known throughout the oil and gas industry of the State, and has a background which will particularly fit him into the work of training young men for the oil and gas industry of West Virginia as well as doing investigating work on some of the problems of the industry.

The appointment of Mr. Davisson, along with the completion of the new Mineral Industries Building in the near future, will enable the School of Mines to offer improved instruction in its oil and gas curriculum as well as to expand considerably the investigation and research work relating to the industry. The Mineral Industries Building will be equipped with the latest laboratory apparatus for use in oil and gas instruction and research.

D. L. McElroy, Director
School of Mines

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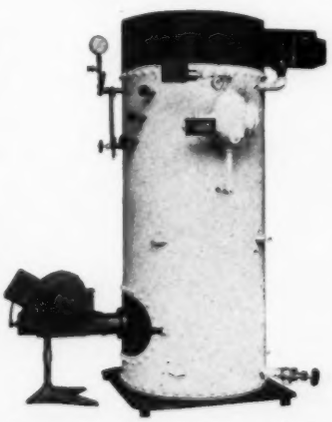

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Book Reviews

The Waverly Handbook, Tenth Edition. Published by Waverly Oil Works Company, Pittsburgh, Pa. 1941. 902 pages. Price $2.00. (Orders should be sent to The Symons Company, Pittsburgh, Pa.)

This handbook for the past thirty years has been referred to in the petroleum industry as "The Oil Man's Bible."

The new edition contains much information never before published, relating to various processes of refining, standards, lubrication problems (both industrial and automotive), production and marketing data. It has hundreds of useful reference tables, charts and graphs.

Written in not too technical language the book is of increased value to the oil man and to students of petroleum engineering.

It contains information on Lubricating Oil — Refining Processes; Pennsylvania Crude Oil — Refining Processes; Animal and Vegetable Oils; Fuel Oil—Its Uses and Advantages; World Crude Oil Production and Price Record; Gasoline—Types and Methods of Refining; Secondary Recovery Methods; Automotive Lubrication; Benzol as a Blending Agent; A. S. T. M. Petroleum Standards; Oil and Gasoline Meters —Types and Uses; Fire Underwriters Regulations; Business Law Section; Tables of Weights, Measures, Capacities; Workshop Formulas—Construction Data; Business and Banking Information—Tables.

The Analytical Chemistry of Industrial Poisons, Hazards and Solvents by Morris B. Jacobs. Interscience Publishers, Inc., 215 Fourth Avenue, New York, N. Y. 1941. 661 pages. Price $7.00.

The author of the exhaustive and valuable treatise has viewed the subject very largely from the chemical standpoint. He classifies industrial poisons, gives the compounds most apt to be encountered in industry and their toxicity, outlines methods of sampling and covers in detail the various analysis procedures.

Of particular interest to the gas industry are chapters covering Sampling of Air and Gas; Measurement of Gas Volume and Quantity (including gas measuring devices, a discussion of gas laws, gas concentrations and conversion formulae, absorbers and adsorption); Dust; The Common Poisonous Compounds of Sulfur, Phosphorus and Nitrogen—Oxygen and Ozone (such as sulfur dioxide, hydrogen sulfide and the oxides of nitrogen); Carbon Monoxide; Carbon Dioxide; Hydrocyanic Acid and Cyanogen; Paraffin and Unsaturated Aliphatic Hydrocarbons (such as methane, ethane, gasoline, etc.); Benzene and the Aromatic Hydrocarbons; Phenolic Compounds, and Chemical Warfare Agents.

In the gas industry, this book will probably be of interest and value to chemists and some chemical engineers. For those concerned with the subjects which it covers, its value should be substantial.

Telemetering, Supervisory Control, and Associated Circuits. Report of Joint Subcommittee of the American Institute of Electrical Engineers. July, 1941, 27 pages, 8½x11. Price 80c (AIEE Members 40).

Although telemetering and remote control instruments are electrical developments and are widely used in the electric power industry, their greatest—and rapidly growing—field of application is in the non-electrical industries. Such instruments are finding constantly wider application in connection with the transmission of water, oil and gas.

The report has been divided into three main sections.

1. *Telemetering*, i.e., the indicating recording or integrating of a quantity at a remote point by electrical means. A tabulation of the characteristics of each system is included.

2. *Supervisory Control*, i.e., the selective control and indication of a number of remotely located units of equipment or apparatus by electrical means over a relatively small number of common transmission channels. A tabulation of the characteristics of each system is included.

3. *Circuits for Telemetering and Supervisory Control Systems.*

Air and Gas Compression. By Thomas T. Gill, Union Oil Company of California. John Wiley & Sons, Inc., New York, N. Y. 1941. 181 pages; 6x9. 35 illustrations. Price $3.00.

We have no hesitation in recommending this book to gas engineers who desire not only to be informed on the results of recent research in the properties of gases, especially in regard to compressibility, critical data and specific heats, but also to have available an authoritative practical reference to aid them and simplify their day-to-day work.

The theory of air and gas compression is clearly and concisely stated, and the methods of solving the various problems can be understood and applied by the man in industry. A large number of alignment charts provide for quick approximate solution, which is sufficiently accurate in many cases.

In addition to the theory of compression, there is also a chapter on the flow of gas in pipe lines, which is based on the Weymouth equation. A new series of tables is included which greatly reduces the labor required in computing pressure drop in pipe lines. A chapter on the orifice meter is intended to serve merely as an introduction to the subject, containing only enough information to enable the reader to use gas measurement handbooks published by the meter manufacturers and the technical societies.

Contents: Definitions and Fundamental Units. Barometric Pressure and Altitude Above Sea Level. Fundamental Gas Laws. Energy Relations — Single-Stage Compression. Compressor Capacity. Volumetric Efficiency and Clearance. Indicated Horsepower. Two-Stage Compression. Multistage Compression. Exponent of Compression. Volumetric Efficiency and Compressor Brake Horsepower. Compressor Problems. Supercompressibility or Deviation from the Ideal Gas Laws. Compressors. Compressor Plant. Gas Lift and Pressure Maintenance. Flow of Gas in Pipe Lines. Gas Measurement by Orifice Meter. Use of Alignment Charts.

Organic Methods of Scale and Corrosion Control. By David W. Haering.

A new fourth edition of the D. W. Haering and Company Booklet on "Organic Methods of Scale and Corrosion Control," America's only text on the use of organic chemicals in water treating is just off the press. Largely rewritten and enlarged to accommodate additional information, this new twenty-eight page discussion of organic methods prevents the newest information on scale and corrosion control.

In addition to the discussion of organic chemicals the new edition includes an explanation of causes of scale and corrosion and introduces a new section tabulating the physical and chemical properties of the various glucosates.

The fourth edition of "Organic Methods of Scale and Corrosion Control" is available without charge or obligation to those addressing requests to D. W. Haering & Co., Inc., 205 W. Wacker Drive, Chicago, on business letterheads.

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Technical Section

(Continued from page 69)

sirable tar bases can be obtained by treating about half this amount. According to Wald (3) when 4 to 5 gallons per minute of saturator liquor are treated, the concentration of tar bases in the liquor is 1%. He does not state what per cent recovery this represents but undoubtedly it would not pay to operate at a higher rate.

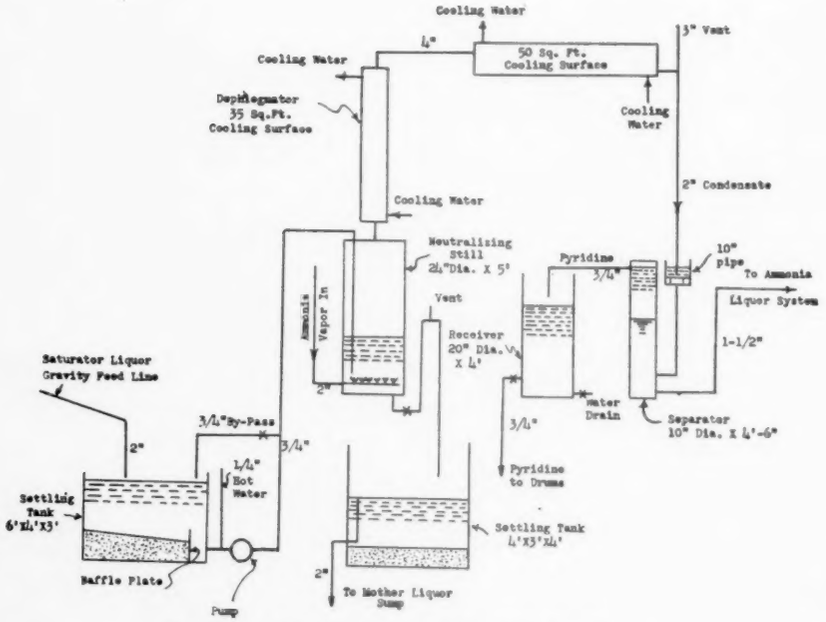
When we were asked to recover the tar bases from our saturator liquor we were acquainted only with the old batch process used at the coke plant at Rainey-Wood which appeared to be a modification of that used by Dodge and Rhodes (2). It was apparent that the tanks, etc. required by the batch process would be expensive and would also occupy much more space than we had available, and furthermore the intermittent method was obviously inefficient with respect to the maximum recovery of tar bases. Wald (3) recognized this too and reports that when a saturator bath contains about 5 or 6% tar bases, which it will, after about three days' operation, the amount of tar bases removed from the gas will be equal to what deposits with the ammonium sulphate only.

Seaboard Procedure

The tar bases are practically insoluble in neutral or alkaline solutions saturated with ammonium salts, so that to remove them from saturator liquor it is only necessary to neutralize it and remove the bases by distillation or separation by gravity. The natural neutralizing agent to use in a coke plant is the ammonia vapors from the crude ammonia stills and one is confronted only with the choice of whether to neutralize the liquor with condensed or partially condensed vapors, or to treat the liquor with the hot vapors direct.

Preliminary Tests: Tests were made to decide which of the above procedures was the better and it was found that when saturator liquor is "steam distilled" with crude ammonia still vapors and the outlet vapors dephlegmated to a temperature of about 96° C., that the condensate separated readily into two layers. The upper layer contained the tar bases with about 15% water and the lower was an aqueous solution of ammonium carbonate containing negligible amounts of the tar bases. It was obvious from this that by controlling the reflux temperature, a simple continuous process could be installed for removing the tar bases on a plant scale and which would yield a crude product containing no tarry matter, etc.

Operation of the Plant: The liquor is removed from the drain tables intermittently about every two hours and discharged into a small lead lined tank. It is pumped from this to the neutralizer at a rate of about 1.5 gals. per minute where it is met by ammonia vapor from the stills. The flow of these vapors is maintained at such a rate that the effluent from the bottom is just alkaline to litmus paper. The dephlegmator on top of the neutralizer is operated so that the vapors leaving it are maintained at from 92° C. to 96° C. The condensed vapors flow into the separator and separate into two layers. The upper layer has a specific gravity of 1.002, contains all the tar bases, and is run continuously into drums. The lower layer, a strong solution of ammonium carbonate (S. G. usually about 1.03), containing practically no tar bases, is discharged to the ammonia liquor system. The continuous separation without preliminary salting out is possible only when the ratio of NH_3 to CO_2 in the vapor leaving the dephlegmator is such that the condensate contains enough ammonium carbonate to render the tar bases insoluble in it.



Flow diagram of plant for recovering tar bases from saturator liquid

TAR BASES—(PYRIDINE EQUIVALENT)

Gas entering the Saturators	20-30	Grains per 100 Cu. Ft.
Gas leaving the Saturators	10-15	Grains per 100 Cu. Ft.
Saturator Liquor	40-50	Grams per liter
Gas after the Final Coolers	0	
Still Waste	Trace	
Ammonium Sulphate	0.07-0.18	Per Cent
Gas Liquor	0.2-0.4	Grams per liter

The effluent from the neutralizer is returned to the saturators and its acidity must be maintained within rather narrow limits. Ferrous sulphide and iron-cyanogen compounds precipitate out if it becomes alkaline and the removal of tar bases from the liquor is seriously reduced if it becomes too acid. It has been found that a pH of from 6 to 7 is about right and this condition is maintained by testing with litmus paper and adjusting the rates so that the effluent liquor is just alkaline to red litmus.

The above procedure is suitable for the recovery of all the marketable tar bases and can be controlled to suit the existing market conditions. The apparatus is simple and can be constructed mainly from equipment usually found in any coke plant.

Tar Bases Produced: We are carbonizing about 2800 tons of coal per day and recovering approximately 1400 gals. per month of *crude* tar bases having the following analysis.

Moisture	20-30% by Volume
Pyridine	25-30% by Volume
Total Tar Bases	500-600 grams per liter

On the basis of this analysis, the actual tar bases present would contain about 50 to 60% pyridine.

RECOVERY PER TON OF COAL

Crude Tar Bases	0.0168 Gals.
Tar Bases	0.070 Lbs.
Pyridine	0.042 Lbs.

Tar Bases in Gas, Etc.: It is not possible by any simple procedure to analyze the plant products with respect to any single component of the tar bases, for to do so it would be necessary to recover enough of the crude bases for fractionation. We are able only to analyze for total tar bases and a result of a preliminary survey as shown in the adjoining table.

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Fuel-Flue Gases—Second Printing

So great has been the demand for "Fuel-Flue Gases," that the Technical Section of the American Gas Association has found it necessary to reprint the book.

While the Subcommittee of the Chemical Committee, (Louis Shnidman, Chairman), under whose direction it was prepared, modestly calls this a "second printing" rather than a "second edition," many revisions have been made and some valuable new material added.

Particularly noticeable is the addition of footnotes showing the source of the original information, thus facilitating reference to the complete original work.

Other additions include information on "pressure piling" in gas explosions, notes on organic sulphur removal from gas and information on the carbon monoxide content of air in cities.

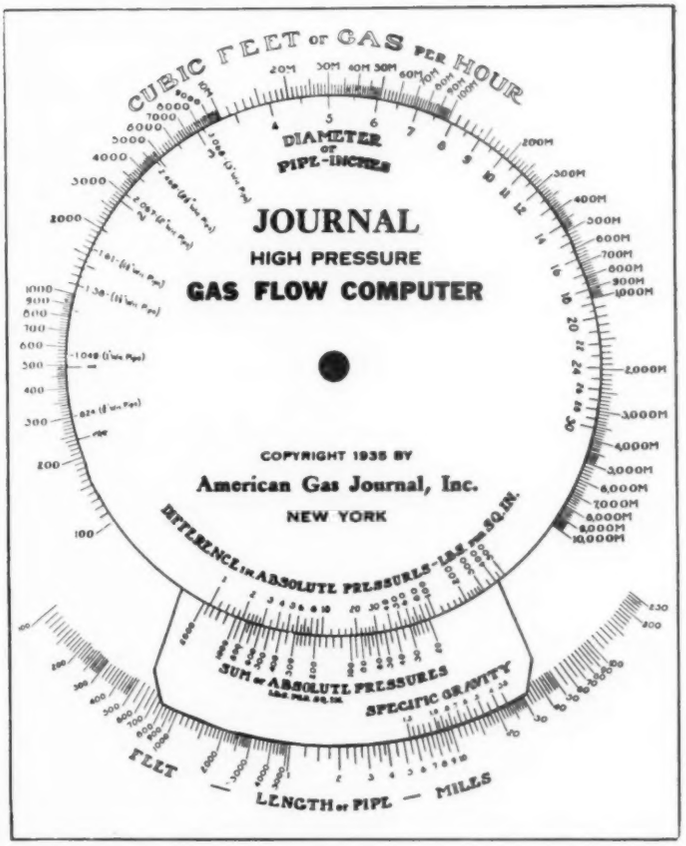
The price of the book is $2.25 per copy to members of the American Gas Association and $3.50 per copy to non-members. It is obtainable direct from the American Gas Association, 420 Lexington Avenue, New York, N. Y.

B. F. Welch Appointed South Western Sales Director for Pittsburgh

B. F. Welch has been appointed Director of Sales in Texas and New Mexico for the Pittsburgh Water Heater Corp., according to an announcement made this week by company officials at Pittsburgh, Pa.

Mr. Welch is a native Texan and is thoroughly familiar with the important Southwestern territory in which he will work. He has a successful record of over 15 years in the water heater sales field.

"Journal" Gas Flow Computers



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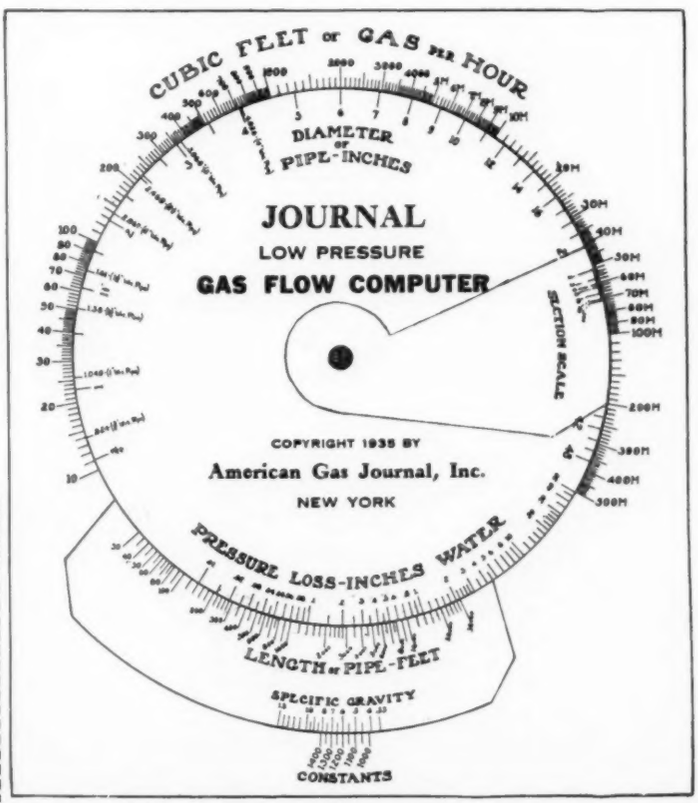

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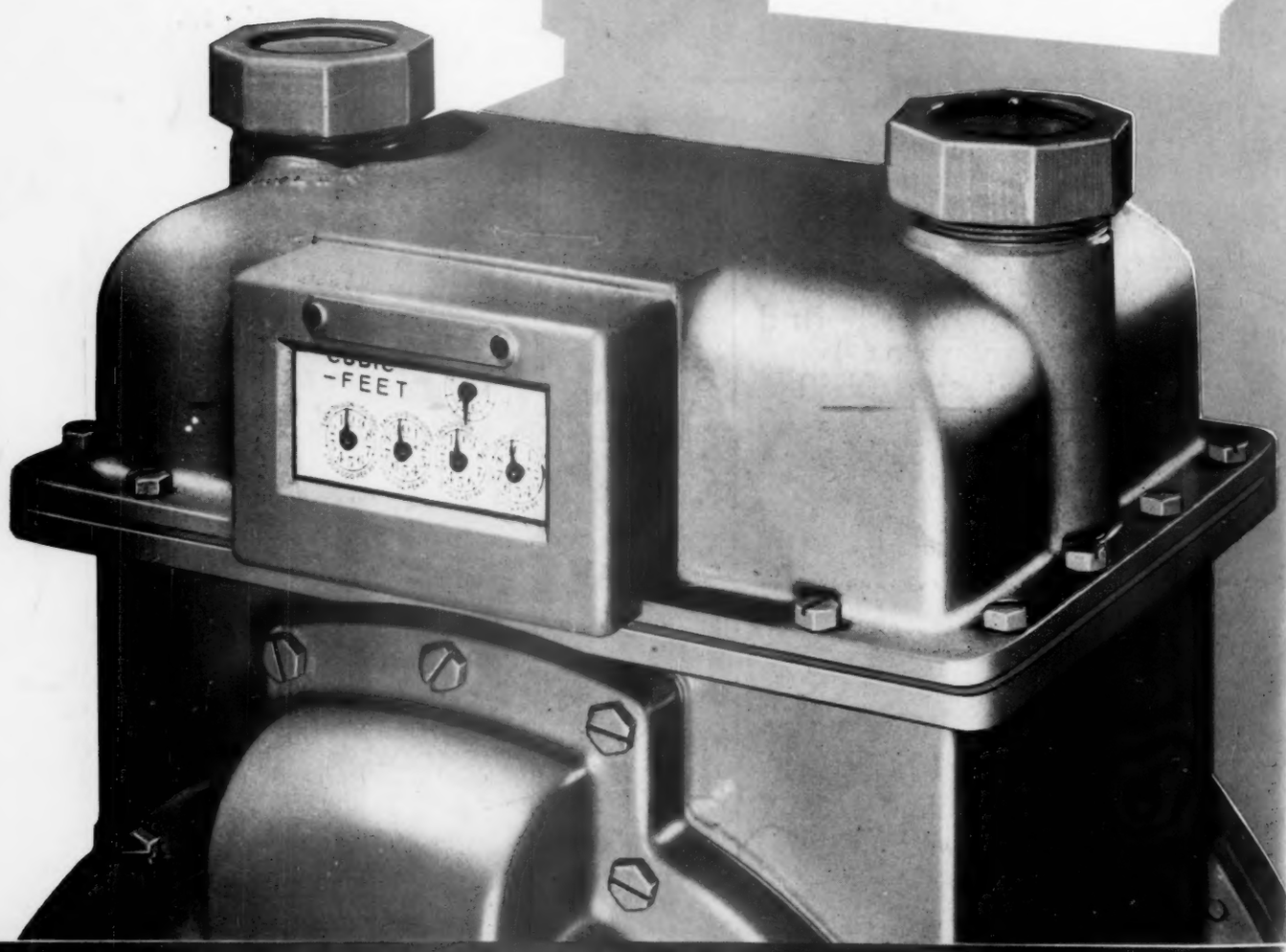

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